HRS DOCUMENTATION RECORD – REVIEW COVER SHEET

Site Name: Keddy Mill

EPA ID No.: MEN000106078

Contact Persons

Site Investigation:
H&S/Nobis Environmental JV LLC. (HSNE)
Superfund Technical Assessment and Response Team III (START)
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(Mr. Denis McGrath, CHMM - (978) 703-6016)

Documentation Record:
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U.S. Environmental Protection Agency (EPA) Region 1
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(Ms. Martha Bosworth)

Pathways, Components, or Threats Not Scored

The ground water, drinking water threat of the surface water, soil exposure, and air migration pathways were not scored in this Hazard Ranking System (HRS) documentation record because the human food chain and environmental threats of the surface water migration pathway are sufficient to qualify the Keddy Mill for the National Priorities List (NPL).

Ground Water Migration Pathway
Based upon the location and proximity of the surrounding drinking water supply resources, no nearby drinking water supplies are known or suspected to have been impacted by a release from sources; therefore, this pathway has not been included in this HRS documentation record [Ref. 3].

Soil Exposure Pathway
Soil sampling has been limited to the Keddy Mill property itself [Ref. 4, pp 23-34; Ref. 6, p. 19]. Based upon the lack of a resident population, terrestrial sensitive environments, and the relatively low nearby population targets, the resulting pathway score would not contribute significantly to the overall site score. This pathway has not been included in this HRS documentation record.

Air Migration Pathway
To date, a release of hazardous substances to air from on-site sources has not been documented; consequently, the resulting pathway score would not contribute significantly to the overall site score. This pathway has not been included in this HRS documentation record.

SDMS Doc ID 551068

HRS DOCUMENTATION RECORD

Site Name: Keddy Mill **Date Completed:** December 2013

EPA Region: 1

Street Address of Site*: 7 Depot Street

City, County, State, Zip Code: Windham, Cumberland County, Maine, 04062

General Location in the State: Southwestern Maine

Topographic Map: Gorham, Maine, U.S. Geological Survey 7.5-Minute Quadrangle; 1957, Photorevised 1970, Photoinspected 1975 [Ref. 5]

Latitude:** **43° 44' 05.83202 N**
Longitude:** **70° 25' 28.25026" W**

Scores

Ground Water Pathway	NS
Surface Water Pathway	100.00
Soil Exposure Pathway	NS
Air Pathway	NS

HRS Site Score: **50.00**

NS = Not Scored

*The street address, coordinates, and contaminant locations presented in this HRS documentation record identify the general area the site is located. They represent one or more locations EPA considers to be part of the site based on the screening information EPA used to evaluate the site for NPL listing. EPA lists national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release, not precisely delineated boundaries. A site is defined as where a hazardous substance has been "deposited, stored, disposed, or placed, or has otherwise come to be located." Generally, HRS scoring and the subsequent listing of a release merely represent the initial determination that a certain area may need to be addressed under CERCLA. Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will be refined as more information is developed as to where the contamination has come to be located.

** The geographic coordinates of the property were measured based on source sample SO-01-0002, located in the northwestern portion of the property, approximately 225 feet northwest of the former Melt Building [Ref. 7, pp. 1] (refer to Figure 3 of this HRS documentation record).

WORKSHEET FOR COMPUTING HRS SITE SCORE

	S pathway	S^2 pathway
1. Ground Water Migration Pathway Score (S_{gw})	Not Scored	Not Scored
2. Surface Water Migration Pathway Score (S_{sw}) (from Table 4-1, Line 30)	100.00	10,000
3. Soil Exposure Pathway Score (S_s)	Not Scored	Not Scored
4. Air Migration Score (S_a)	Not Scored	Not Scored
5. Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		10,000
HRS SITE SCORE= $\sqrt{\frac{S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2}{4}}$		50.00

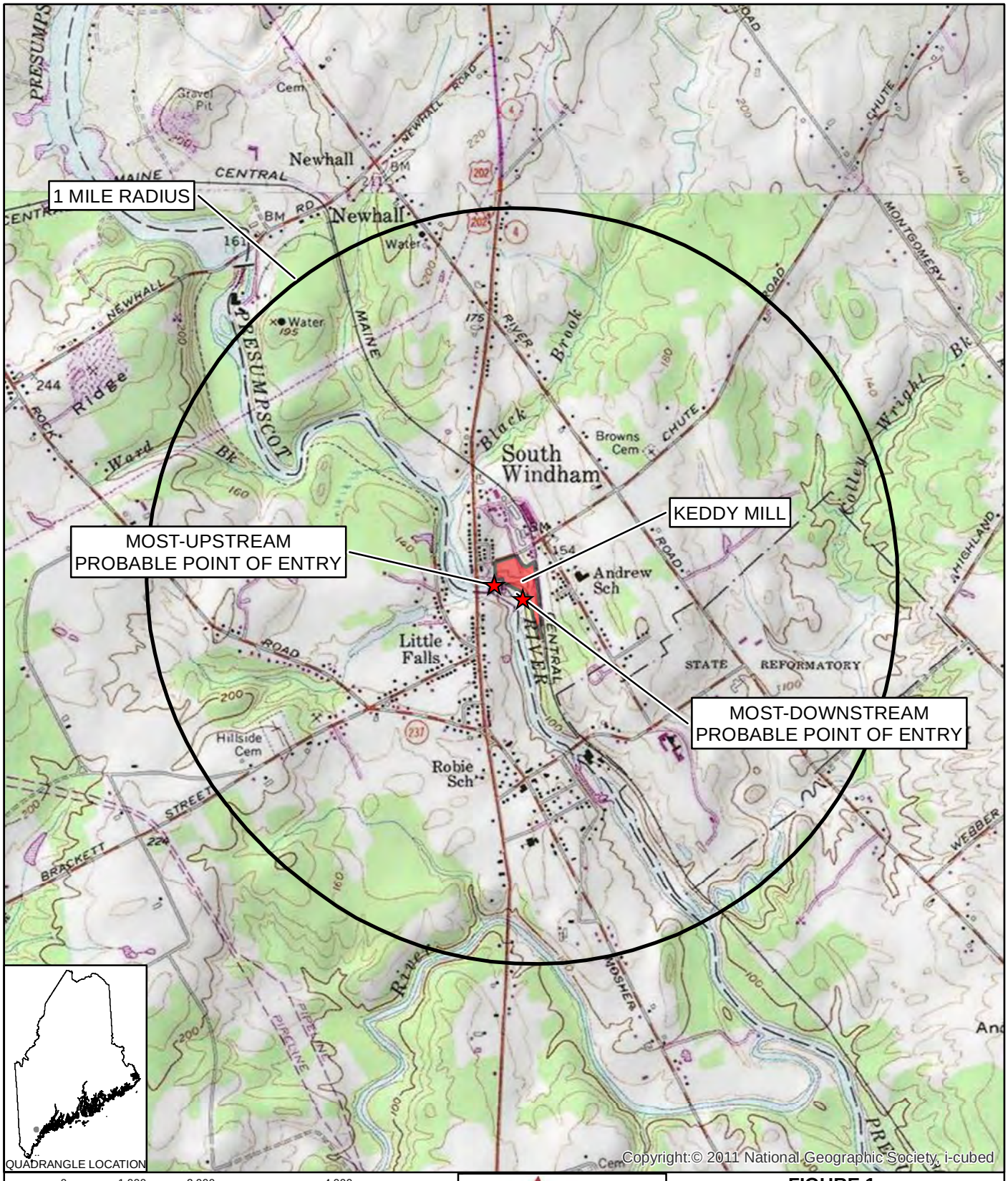
TABLE 4-1 - SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET		
Factor Categories & Factors	**Maximum Value**	**Assigned Value**
Drinking Water Threat		
Likelihood of Release:		
1. Observed Release	550	550
2. Potential to Release by Overland Flow		
2a. Containment	10	Not Scored
2b. Runoff	25	Not Scored
2c. Distance to Surface Water	25	Not Scored
2d. Potential to Release by Overland Flow (line 2a×[line 2b + line 2c])	500	Not Scored
3. Potential to Release by Flood		
3a. Containment (Flood)	10	Not Scored
3b. Flood Frequency	50	Not Scored
2c. Potential to Release by Flood (lines 3a×3b)	500	Not Scored
4. Potential To Release (lines 2d + line 3c; subject to a maximum of 500)	500	Not Scored
5. Likelihood of Release (higher of lines 1 and 4)	550	550
Waste Characteristics:		
6. Toxicity/Persistence	(a)	Not Scored
7. Hazardous Waste Quantity	(a)	Not Scored
8. Waste Characteristics	100	Not Scored
Targets:		
9. Nearest Intake	50	Not Scored
10. Population		
10a. Level I Concentration	(b)	Not Scored
10b. Level II Concentration	(b)	Not Scored
10c. Potential Drinking Water Contamination	(b)	Not Scored
10d. Population (lines 10a+10b+10c)	(b)	Not Scored
11. Resources	5	Not Scored
12. Targets (lines 9+10d+11)	(b)	Not Scored
Drinking Water Threat Score:		
13. Drinking Water Threat Score ([line 5 × line 8 × line 12] ÷ 82,500; subject to a maximum of 100)	100.00	Not Scored
Human Food Chain Threat		
Likelihood of Release:		
14. Likelihood of Release (copy from line 5)	550	550
Waste Characteristics:		
15. Toxicity/Persistence/Bioaccumulation	(a)	5.0×10^{8}
16. Hazardous Waste Quantity	(a)	100
17. Waste Characteristics	1,000	320

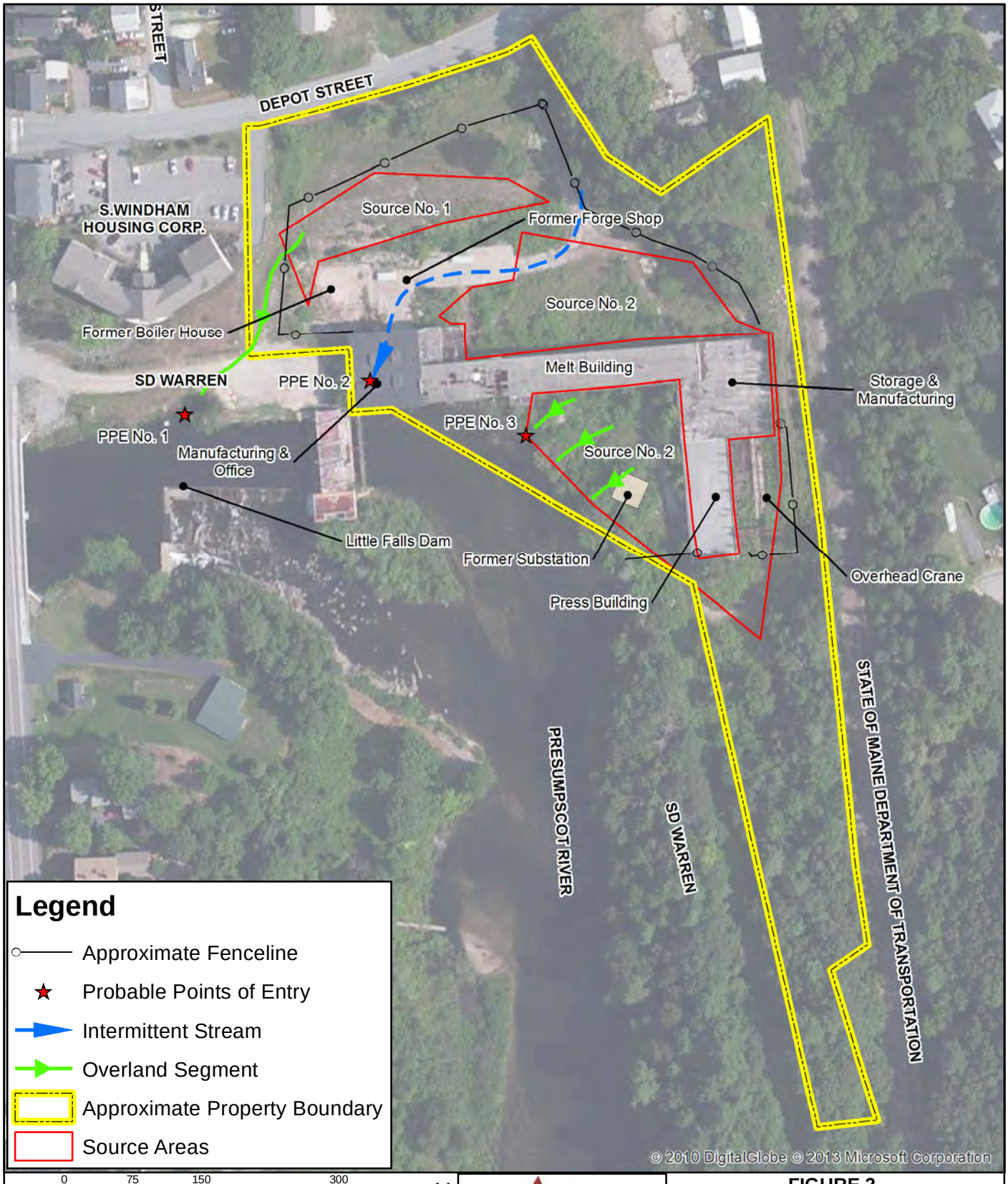
TABLE 4-1 - SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET		
Factor Categories & Factors	**Maximum Value**	**Assigned Value**
Targets:		
18. Food Chain Individual	50	20
19. Population		
19a. Level I Concentration	(b)	0
19b. Level II Concentration	(b)	0
19c. Potential Human Food Chain Contamination	(b)	0.00003
19d. Population (lines 19a+19b+19c)	(b)	0.00003
20. Targets (line 18 + line 19d)	(b)	20.00003
Human Food Chain Threat Score:		
21. Human Food Chain Threat Score ([line 14 × line 17 × line 20] ÷ 82,500; subject to a maximum of 100)	100.00	42.66
Environmental Threat		
Likelihood of Release:		
22. Likelihood of Release (copy from line 5)	550	550
Waste Characteristics:		
23. Ecosystem Toxicity/Persistence/Bioaccumulation	(a)	5.0×10^{8}
24. Hazardous Waste Quantity	(a)	100
25. Waste Characteristics	1,000	320
Targets:		
26. Sensitive Environments		
26a. Level I Concentration	(b)	0
26b. Level II Concentration	(b)	30
26c. Potential Sensitive Environments Contamination	(b)	Not Scored
26d. Population (lines 26a+26b+26c)	(b)	30
27. Targets (copy from line 26d)	(b)	30
Environmental Threat Score:		
28. Environmental Threat Score ([line 22 × line 25 × line 27] ÷ 82,500; subject to a maximum of 60)	60.00	60.00
Surface Water Overland Flow/Flood Migration Component Score for a Watershed		
29. Watershed Score (line 13 × line 21 × line 28; subject to a maximum of 100)	100.00	100.00
Surface Water Overland Flow/Flood Migration Component Score		
30. Component Score (S_{of}), (highest of line 29 for all watersheds evaluated; subject to a maximum of 100.	100.00	100.00

(a) – Maximum value applies to waste characteristics category
(b) – Maximum value not available
(c) – Do not round to the nearest integer

ACRONYMS AND ABBREVIATIONS

µg/kg	Microgram per kilogram
bgs	Below ground surface
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CLP	Contract Laboratory Program
CRQL	Contract-Required Quantitation Limit
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
HRS	Hazard Ranking System
HSNE	H&S\Nobis Environmental JV, LLC.
HWQ	Hazardous Waste Quantity
LLC	Limited Liability Corporation
MDIFW	Maine Department of Inland Fisheries and Wildlife
MEDEP	Maine Department of Environmental Protection
mg/kg	Milligram per kilogram
NPL	National Priorities List
NWI	National Wetlands Inventory
PCB	Polychlorinated biphenyl
PPE	Probable point of entry
SCDM	Superfund Chemical Data Matrix
SI	Site Inspection
SICP	Self-Implementing Cleanup Plan
SQL	Sample Quantitation Limit
SOW	Statement of Work
START	Superfund Technical Assessment and Response Team
TDL	Target Distance Limit
TOC	Total Organic Carbon
TSCA	Toxic Substances Control Act
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey


1 MILE RADIUS
KEDDY MILL
MOST-UPSTREAM PROBABLE POINT OF ENTRY
MOST-DOWNSTREAM PROBABLE POINT OF ENTRY
Newhall
South Windham
Little Falls
Andrew Sch
Robie Sch
Hillside Cem
Browns Cem
STATE REFORMATORY
PRESUMPSCOT RIVER
Black Brook
Ward Bk
Colley Wright Bk
MAINE CENTRAL RIVER
NEWHALL ROAD
CHUTE ROAD
MONTGOMERY ROAD
HIGHLAND
WEBBER
BRACKETT STREET
PIPELINE
QUADRANGLE LOCATION
Copyright:© 2011 National Geographic Society, i-cubed
0 1,000 2,000 4,000
Feet 1:24,000
N
Topography Data Source: National Geographic through ESRI
USGS Quadrangle Name: Gorham, Maine, Revised 1975.
SIte Boundary: Reference 11
Location of all features is approximate. Map is for reference purposes only. H&S/Nobis Environmental JV, LLC makes no claims, warranties, representations, expressed or implied, relating to the completeness, accuracy, or reliability of the data shown.
H&S/Nobis ENVIRONMENTAL JV, LLC
160 East Main Street Suite 2F
Westborough, MA 01581
FIGURE 1
PROPERTY LOCATION
KEDDY MILL
7 DEPOT STREET
WINDHAM, MAINE
TDD No. SA-01-13-01-0001
DRAWN BY: DM
DATE: August, 2013
Path: O:\Active\87000 EPA Region I START\87001.10_Keddy_Mill_HRS_Windham_ME\Technical Data\GIS\Maps_and_Figures\Final_Doc_Record\Fig_1_Keddy_Mill_Windham_ME_Site_Locus.mxd



Basemap Image Source: Bing through ESRI portal
Building Locations Source: Reference 14, p. 140
Property Boundary and Abutters Source: Reference 11
Remaining Data: Refs. 35, 43, 60
Location of all features is approximate. Map is for reference purposes only.
H&S/Nobis Environmental JV, LLC makes no claims, warranties, representations, expressed or implied, relating to the completeness, accuracy, or reliability of the data.

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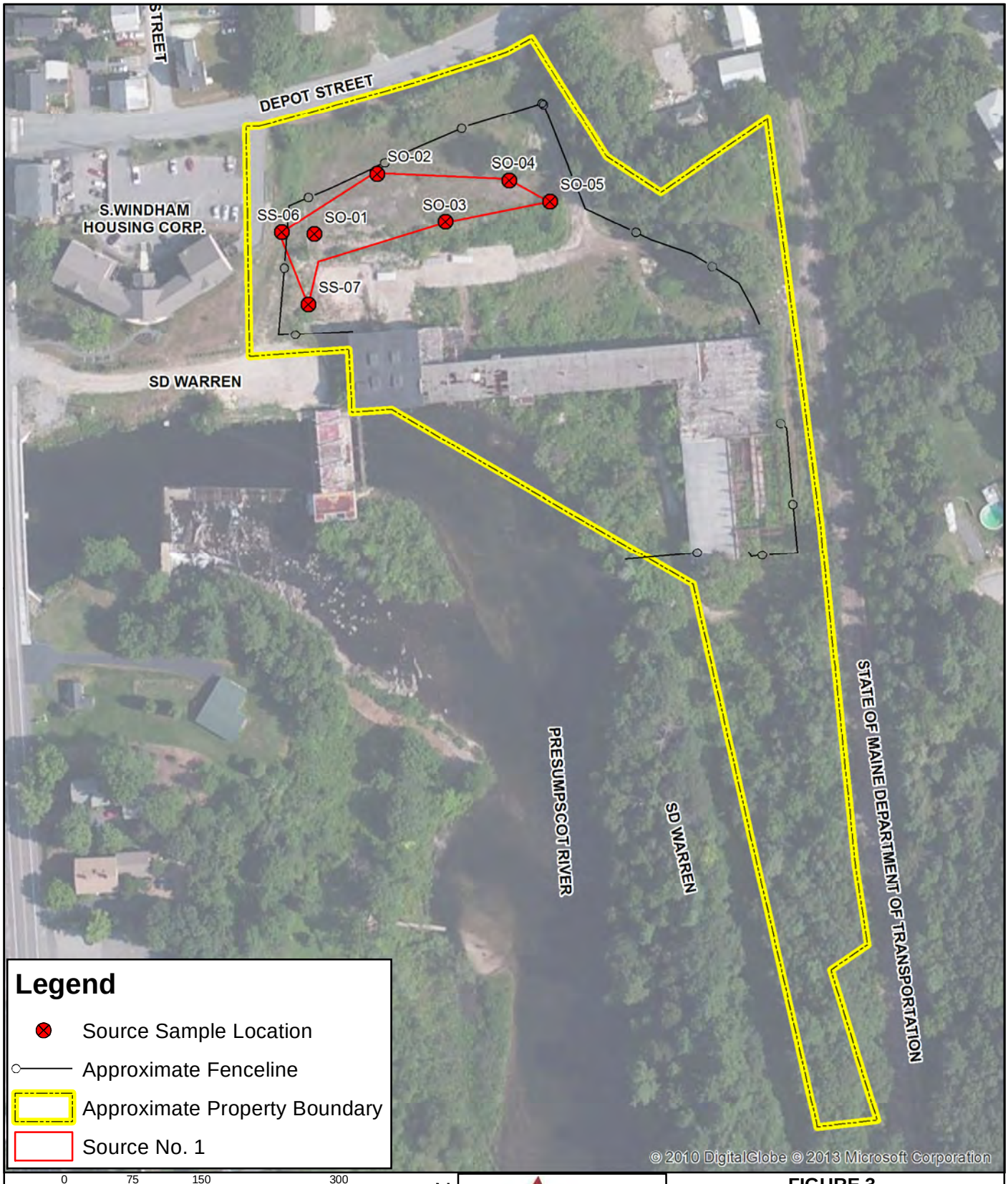
FIGURE 2

PROPERTY LAYOUT
KEDDY MILL
7 DEPOT STREET
WINDHAM, MAINE

TDD No. SA-01-13-01-0001

DRAWN BY: DM | DATE: August, 2013

Path: O:\Active\87000 EPA Region I START\87001.10_Keddy_Mill_HRS_Windham_ME\Technical Data\GIS\Maps_and_Figures\Final_Doc_Record\Fig_2_Keddy_Mill_Site_Plan.mxd



Basemap Image Source: Bing through ESRI portal
Property Boundary and Abutters Source: Reference 11
Source Location: Ref. 35
Location of all features is approximate. Map is for reference purposes only.
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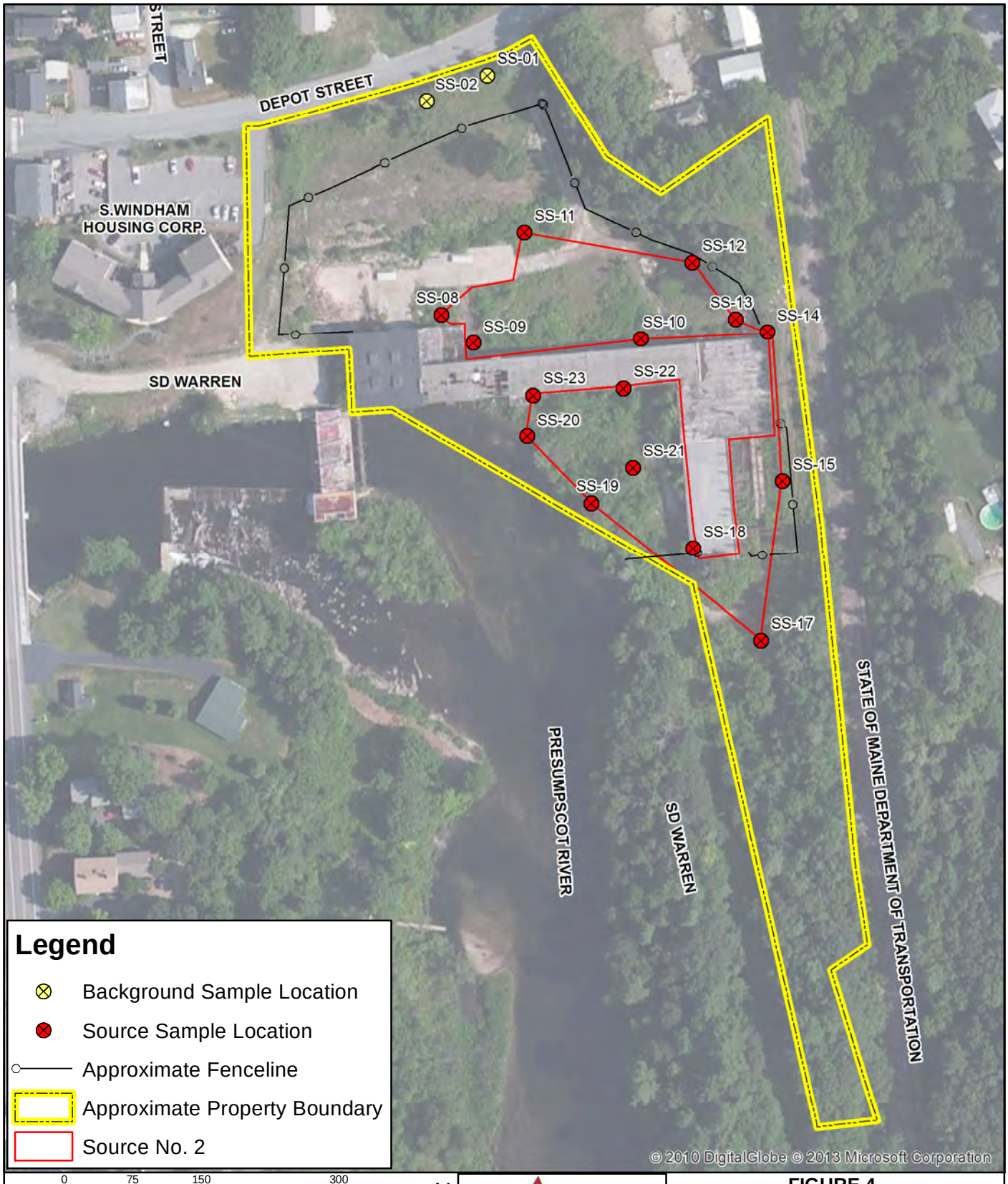
FIGURE 3

SOURCE No. 1 SAMPLE LOCATIONS
KEDDY MILL
7 DEPOT STREET
WINDHAM, MAINE

TDD No. SA-01-13-01-0001

DRAWN BY: DM | DATE: August, 2013

Path: O:\Active\87000 EPA Region I START\87001.10_Keddy_Mill_HRS_Windham_ME\Technical Data\GIS\Maps_and_Figures\Final_Doc_Record\Fig_3_Keddy_Mill_Source_1.mxd



Legend

- Background Sample Location
- Source Sample Location
- Approximate Fenceline
- Approximate Property Boundary
- Source No. 2

0 75 150 300

Feet 1:1,800

N

Basemap Image Source: Bing through ESRI portal
Property Boundary and Abutters Source: Reference 11
Source Location: Ref. 43
Location of all features is approximate. Map is for reference purposes only.
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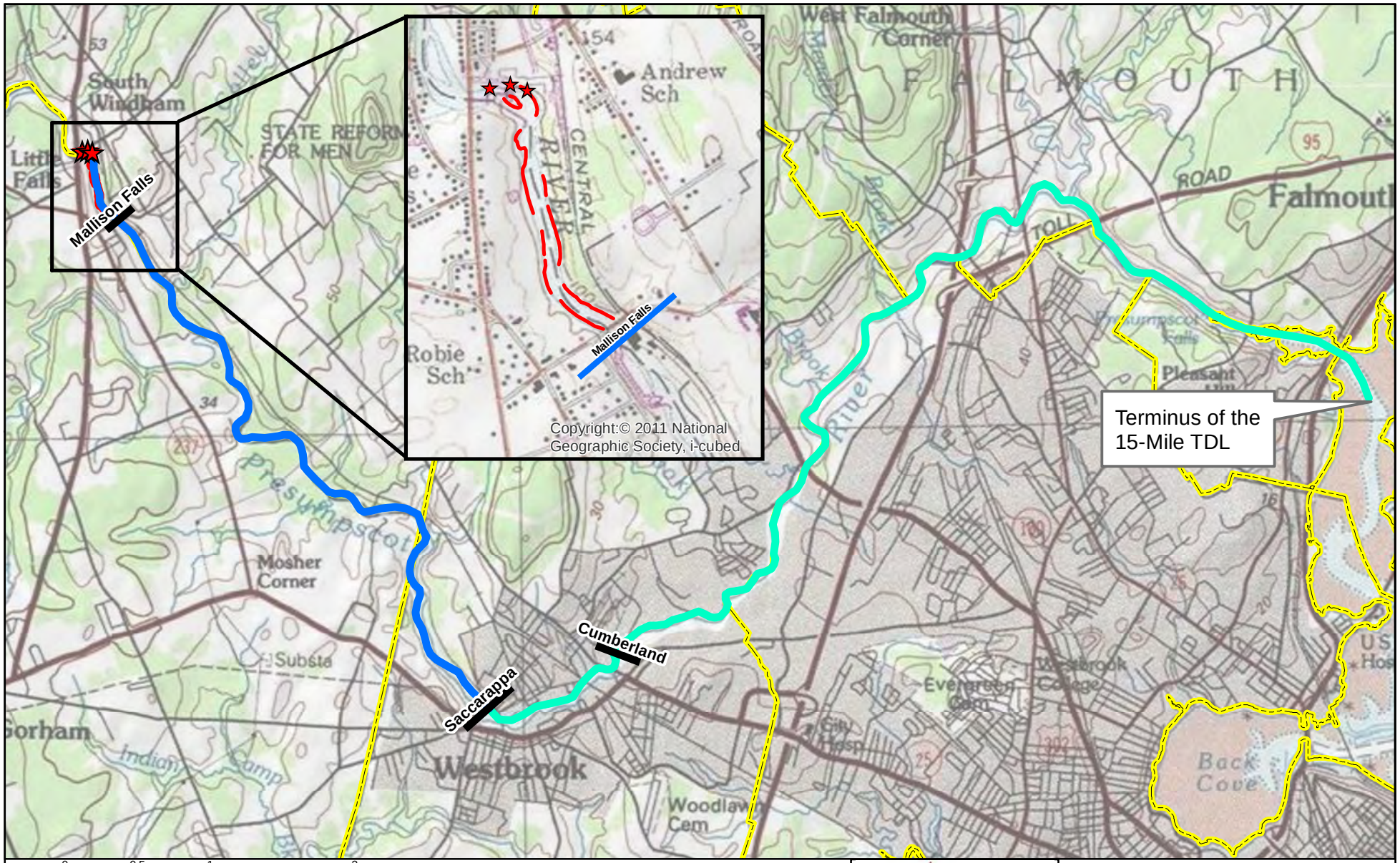
FIGURE 4

SOURCE No. 2 SAMPLE LOCATIONS
KEDDY MILL
7 DEPOT STREET
WINDHAM, MAINE

TDD No. SA-01-13-01-0001

DRAWN BY: DM | DATE: August, 2013

Path: O:\Active\87000 EPA Region I START\87001.10_Keddy_Mill_HRS_Windham_ME\Technical Data\GIS\Maps_and_Figures\Final_Doc_Record\Fig_4_Keddy_Mill_Source_2.mxd


Mallison Falls
Saccarappa
Cumberland
Terminus of the
15-Mile TDL
Copyright:© 2011 National
Geographic Society, i-cubed
0
0.5
1
2
Miles
1:60,059
N
Legend
Probable Points of Entry
Dam
Class B Portion of the
Target Distance Limit
Class C Portion of the
Target Distance Limit
Delineated Wetland Frontage
Town Boundary
Basemap Image Source: Bing through ESRI portal
PPE Locations: Ref. 35, 43; Dam Location: Ref. 5; Wetland Frontage: Ref. 57;
TDL Classification Data: Ref. 54, p. 11
Municipal Boundaries Source: Maine GIS (MEGIS)
Location of all features is approximate. Map is for reference purposes only.
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expressed or implied, relating to the completeness, accuracy, or reliability of the data.
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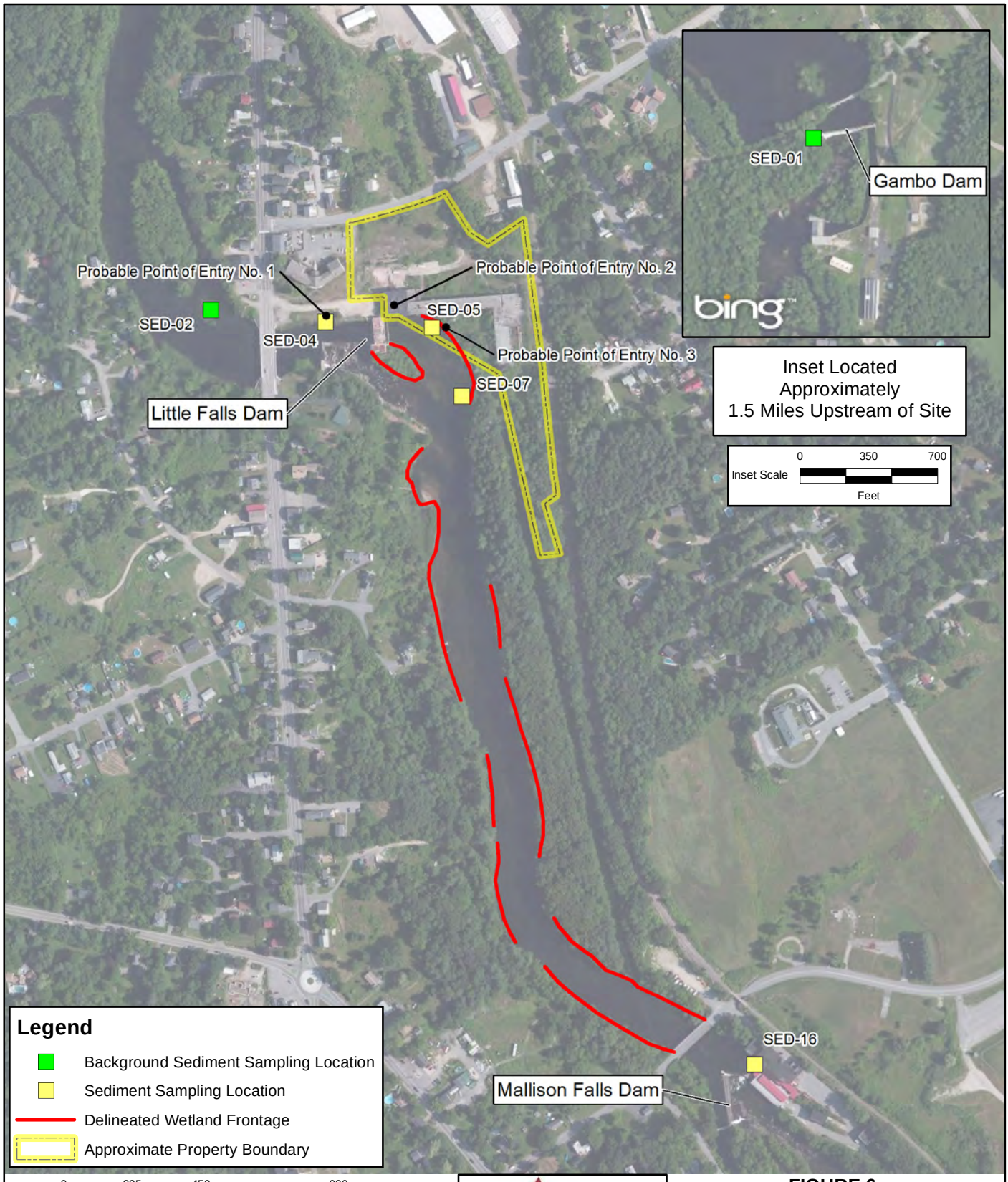
Westborough, MA 01581
FIGURE 5
TARGET DISTANCE LIMIT
KEDDY MILL
7 DEPOT STREET
WINDHAM, MAINE
TDD No. SA-01-13-01-0001
DRAWN BY: DM
DATE: August, 2013
Path: O:\Active\87000 EPA Region I START\87001.10_Keddy_Mill_HRS_Windham_ME\Technical Data\GIS\Maps_and_Figures\Final_Doc_Record\Fig_5_Keddy_Mill_SWP.mxd



Basemap Image Source: Bing through ESRI portal
Property Boundary Source: Ref. 11
Sediment Locations: Ref. 29
Wetland Frontage Source: Ref. 57
Location of all features is approximate. Map is for reference purposes only.
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Westborough, MA 01581

FIGURE 6

SEDIMENT SAMPLE LOCATIONS
KEDDY MILL
7 DEPOT STREET
WINDHAM, MAINE

TDD No. SA-01-13-01-0001

DRAWN BY: DM | DATE: September, 2013

Path: O:\Active\87000 EPA Region I START\87001.10_Keddy_Mill_HRS_Windham_ME\Technical Data\GISMaps_and_Figures\Revised_Final_Doc_Record\Fig_6_Sed_Samples_Keddy_Mill_Windham_ME.mxd

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[48]	Town of Windham, Maine. 1991 (revised 2012). Zoning Map. October 1. 1 page.
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[51]	Maine Department of Inland Fisheries and Wildlife. 2012. 2011 Year to Date Stocking Report. January 3. 42 pages. The report is generated by county.
[52]	Bosworth, M. (EPA Region 1). 2012. Memorandum to file. Subject: Documenting Fishery on the Presumscot [sic] River South of Keddy Mill. July 25. 1 page.
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[55]	Maine Revised Statutes (MRS) Title 38 Section 465; Standards for Classification of Fresh Surface Waters. 5 pages. Current through September 1, 2012. http://www.mainelegislature.org/legis/statutes/38/title38sec465.html
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[57]	McGrath, D. (H&S/Nobis Environmental JV, LLC). 2012. Memorandum to M. Bosworth (EPA) with attachments; Wetland Delineation Memorandum. August 1. 20 pages.
[58]	U.S. Environmental Protection Agency (EPA). 2004. Polychlorinated Biphenyl Inspection Manual; EPA-305-X-04-002. August. Excerpt. 20 pages.
[59]	U.S. Geological Survey. 2013. 2011 Minerals Yearbook; Slag – Iron and Steel [Advanced Release]. January. 10 pages.
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[62]	McGrath, D. (H&S/Nobis Environmental JV, LLC). 2013. Project Note, Keddy Mill, RE: CERCLIS/RCRIS/TSCA/NPDES/VRAP- Facilities. TDD No. SA-01-13-01-0001. August 26. 117 pages.
[63]	McGrath, D. (H&S/Nobis Environmental JV, LLC). 2013. Project Note with attachments, Keddy Mill, RE: CLP Form Is. TDD No. SA-01-13-01-0001. March 29. 50 pages.
[64]	DeRuzzo, G. (H&S/Nobis Environmental JV, LLC). 2013. Project Note, Keddy Mill, RE: Sample Adjusted CRQLs. TDD No. SA-01-13-01-0001. August 26. 2 pages.
[65]	U.S. Environmental Protection Agency (EPA). 1995. EPA Office of Compliance Sector Notebook Project; Profile of the Fabricated Metals Products Industry; EPA-310-R-95-007. September. 156 pages.
[66]	McGrath, D. (H&S/Nobis Environmental JV, LLC). 2013. Project Note with attachments, RE: Keddy Mill Source Nos. 1 and 2 Descriptions. TDD No. SA-01-13-01-0001. August 9. 10 pages.

Reference Number	Description of Reference
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[68]	State of Maine Department of Environmental Protection. 2010 Integrated Water Quality Monitoring and Assessment Report. 328 Pages.
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SITE SUMMARY – Keddy Mill

The Keddy Mill property is located at 7 Depot Street, Windham, Cumberland County, Maine [Ref. 8]. The geographic coordinates as measured from Source No. 1 sampling location SO-01-0002, located in the northwestern portion of the property, approximately 225 feet northwest of the former Melt Building are 43°44'05.83202" north latitude and 70° 5 ' 8.25026" west longitude (refer to Figures 1, 2, and 3 of this HRS documentation record) [Ref. 7]. The 6.93-acre Keddy Mill property is identified on the Town of Windham, Maine tax assessor's Map 38 as Lot 7 [Ref. 9, Ref. 22, p. 2]. The property is currently owned by Keddy Mill Enterprises, LLC, as recorded at the Cumberland County registry of Deeds in Book 29050 Pages 322-326 [Ref. 10, pp. 1-5].

The property is located in the Little Falls portion of Windham, Maine [Ref. 5; Ref. 12, p. 5]. The property is bounded to the north by Depot Street; to the northeast by a partially-developed commercial parcel also owned by Keddy Mill Enterprises, LLC; to the east by a former Maine Central Railroad right-of-way (currently owned by Maine Department of Transportation); to the south and southwest by undeveloped property owned by S.D. Warren Company and the Presumpscot River; to the west by the Presumpscot River, a parking lot property owned by S.D. Warren Company, and a hydroelectric dam and power generating station (also owned by S.D. Warren Company); and to the northwest by an occupied apartment complex owned by the South Windham Housing Corporation (Figure 2) [Ref. 11; Ref. 12, pp. 2, 11].

The Keddy Mill property is currently vacant, but is improved with a derelict two-story concrete industrial structure with a full basement constructed in the early 1900s. The property formerly contained several additional industrial buildings which have since been demolished [Ref. 12, p. 10; Ref. 15, pp. 2, 11].

A visit to the Keddy Mill property was conducted by EPA and its contractor on April 26, 2012 during the performance of the EPA Site Inspection (SI). In addition to the vacant concrete building, EPA and contractor personnel observed that the property was enclosed by a chain-link fence and locked fence gates [26, p. 1].

Several additional property features were noted during the visit including:

- Concrete aboveground storage tank (AST) cradles along the eastern property boundary (purpose unknown) [Ref. 26, p. 1]
- Derelict rail spur and overhead rail crane located adjacent to the southeastern portion of the facility buildings [Ref. 14, p. 19; Ref. 26, p. 1]
- Slag materials located on the ground surface along the derelict rail spur and along the western bank of the Presumpscot River [Ref. 26, p. 2]
- Several large hammering units within the basement of the former Melt Building [Ref. 26, p. 3]. It could not be determined if these units were hydraulic.
- The exposed south face of a deposited mixture of demolition debris with an undetermined number of crushed metal drums located north of the buildings. This deposit appeared to be a pile of debris with the southern face sloping steeply upwards and flattened out on the top. Areas of stressed vegetation were noted on the top of the pile in which materials including slag, metal pieces, fabric, and brick were noted on the ground surface. [Ref. 26, p. 4]

- A concrete pad formerly containing a transformer substation (no transformers were present) southwest of the buildings. Ceramic insulators and wiring were noted in this area as well [Ref. 14, p. 20; Ref. 26, p. 2].

The Keddy Mill site for HRS scoring purposes consists of two sources and associated releases. Source No. 1 is an area of contaminated soil located to the north of the former Boiler House and Forge Shop [Ref. 25, p. 2; Ref. 26, p. 4]. Source No. 2 is an area of contaminated soil near the former Melt Building [Ref. 25, p. 4] (see Figure 2 of this HRS documentation record). Polychlorinated biphenyls (PCBs) Aroclor-1242, Aroclor-1248 and/or Aroclor-1254 have been documented in Source Nos. 1 and 2 (see Section 2.2, Source Nos. 1 and 2 of this HRS documentation record). These hazardous substances have also been documented in sediment samples collected from the Presumpscot River, which receives runoff from Source Nos. 1 and 2, indicating that a release has occurred to the surface water migration pathway (see Section 4.0 of this HRS documentation record).

Facility Operations

Many industrial activities were conducted on the Keddy Mill property between 1756 and 1997. Specifically, a sawmill, grist and wool carding mills, wood pulp and box-board manufacturing, steel manufacturing and fabrication of heavy equipment buckets, manufacturing of fire suppression piping and materials, and a small machine shop and equipment storage previously operated on the property [Ref. 12, p. 19, Ref. 13, pp. 231, 232, Ref. 14, pp. 13, 17, Ref. 15, pp. 2, 10]. Table 1 summarizes historic ownership and operational activities conducted on the Keddy Mill property beginning in 1756.

Table 1 - Historic Ownership and Generalized Operations

Approximate Years of Ownership	Owner	Operations and Events of Significance	References
Prior to 1756-unknown	William Knight	Sawmill	Ref. 13, p. 231; Ref. 14, pp. 15, 16
Unknown - 1847	Unknown	Grist mill and wool carding mills	Ref. 13, p. 232; Ref. 14, p. 17
1847-1853+/-	Unknown	Sawmill (disassembled and relocated in approximately 1853)	Ref. 14, p. 17
1853-1875	Unknown	Unoccupied	Ref. 13, p. 232
1875-1900	Charles A. Brown Company	Wood pulp and box-board manufacture; constructed large mill complex on the property	Ref. 13, pp. 232, 233
1900- March 1940	Androscoggin Pulp Company	Wood pulp and box-board manufacture; Enlarged the mill complex on the property with the construction of several new buildings	Ref. 13, p. 233
March 1940-July 1945	Cumberland Securities Group	Operations at this time are not known, but are assumed to be wood pulp and box-board manufacture	Ref. 12, p. 19; 151
July 1945-December 1945	Windham Fibers	Operations at this time are not known, but are assumed to be wood pulp and box-board manufacture	Ref. 12, p. 19
December 1945-August 1953	Maine Steel	Steel manufacture and fabrication of heavy equipment buckets	Ref. 12, p. 19; Ref. 15, p. 10
August 1953-December 1953	Weiland, Hoodin, Buthckes, Jelin	Unknown	Ref. 12, p. 19
December 1953-August 1954	Irving Fox	Unknown	Ref. 12, p. 19
August 1954-June 1961	Atlantic Mills, Inc.	Unknown	Ref. 12, p. 19
June 1961-November 1969	Keddy Manufacturing Co.	Unknown	Ref. 12, p. 19
November 1969-August 1973	Grinnell Corporation	Fire suppression piping and materials manufacture	Ref. 15, pp. 2, 10

Table 1 - Historic Ownership and Generalized Operations			
Approximate Years of Ownership	**Owner**	**Operations and Events of Significance**	**References**
August 1973-May 1974	Park Corporation	Liquidation of heavy machinery within the former mill complex	Ref. 15, pp. 2, 10
May 1974-July 1975	Lawrence J. Keddy	Operations not known.	Ref. 12, p. 19; Ref. 15, p. 2
January 1975-January 1978	National Metal Converters	Operated by National Metal Converters (also known as New England Steel Company); operations not known; presumed steel manufacture	Ref. 15, p. 2
January 1978-April 1993	Lawrence J. Keddy	Unknown; however a Phase I Investigation performed in 1993 stated that reinforcing steel had been manufactured on the Keddy Mill property	Ref. 14, p. 15; Ref. 15, p. 3
January 1993-November 1997	Barnard-Marquit Corp.	Unknown; in November 1997, the facility was used as a small machine shop and equipment storage	Ref. 12, p. 19
November 1997-September 2002	Presumpscot/ Phoenix Corp.	Unknown	Ref. 12, p. 19
September 2002-November 2006	Lumas, Inc.	Unknown	Ref. 12, p. 19
November 2006-October 2011	HRC-Village at Little Falls, LLC	Presumed property redevelopment	Ref. 12, p. 19
October 2011-date of report	Keddy Mill Enterprises, LLC	Presumed property redevelopment	Ref. 10, pp. 1-5

Previous Phase I environmental investigations provided some information regarding the usage of each of the Keddy Mill property buildings in place at the time. Table 2 provides a summary of the information accumulated and observations made during previous investigations regarding each of the buildings on the property, either currently or formerly.

Table 2 - Historic Building/Structure Usage		
Building Identification	**Building Usage & Notable Observations**	**References**
Manufacturing and Office Building	Formerly used as a reinforcing steel manufacturing building and a machine shop. Also housed administrative offices. Bags of "Kast-O-Lite" were present, which was a lining material for use in melt furnaces. Furnaces were observed in the basement of this building. A portion of the Presumpscot River flows beneath the western portion of the building. Floor drains draining to the Presumpscot River were observed in the basement.	Ref. 14, pp. 20, 21; Ref. 15, p. 3; Ref. 16; Ref. 26, p. 3.
Forge and Remelt Shop	Formerly contained two bunker oil-fired rotary remelt furnaces and reinforcing steel manufacturing equipment. Building is now demolished.	Ref. 15, pp. 3, 4; Ref. 14, p. 19
Boiler House	Contained six aboveground storage tanks that contained bunker oil (presumably to fire boilers/furnaces). The building also contained a coal hopper and brick smoke stack. Building is now demolished.	Ref. 14, p. 21; Ref. 15, pp. 2, 3, 4
Melt Building	Formerly used for steel manufacturing machinery storage. Several mechanical hammers were noted in the basement. It could not be determined if these were powered hydraulically. Oily stains were observed on the walls near these units. The stains were described as bond breaker and consisted of a mixture of oil and graphite, which was piped to the hammer units.	Ref. 12, p. 19; Ref. 15, pp. 3, 4; Ref. 26, p. 3
Storage and Manufacturing Building	Formerly used for steel manufacturing machinery storage. A steam generator was observed on the first floor, and fuel oil pump was located at the northwestern corner of the building. A large petroleum stain was observed surrounding the fuel pump.	Ref. 15, pp. 3, 4

Table 2 - Historic Building/Structure Usage		
Building Identification	**Building Usage & Notable Observations**	**References**
Press Building	Formerly used for heavy equipment storage.	Ref. 15, pp. 3, 4
Overhead Crane & Rail Spur	Rail cars containing scrap steel were unloaded using an overhead crane. Steel was transported to other portions of the mill and were melted into steel billets.	Ref. 14, p. 19

Specific operational and waste management practices used at the Keddy Mill property are not currently known. Steel manufacture was initiated in December 1945 with the fabrication of heavy equipment buckets [Ref. 15, p. 10]. Subsequent steel manufacturing operations included fire suppression piping and materials manufacture, and reinforcing steel manufacture [Ref. 15, pp. 2, 3, 10, 12]. As reported in a 1993 Phase I investigation of the Keddy Mill property, the mill formerly accepted scrap steel which was melted into steel billets [Ref. 14, p. 19].

The presence of PCBs at the Keddy Mill property was not suggested in available documentation until the 1993 Phase I recommended that the concrete transformer substation pad area be investigated for the presence of PCBs [Ref. 15, p. 13]. A subsequent Phase I investigation performed on the Keddy Mill property identified three transformers on this pad and one pole-mounted transformer located south of the buildings [Ref. 14, pp. 22, 23]. Testing of the contents of these transformers was not performed.

In July 2005, a release of between 30 and 40 gallons of PCB-containing fluid from vandalized electrical equipment within the former Keddy Mill property buildings was reported to the Maine Department of Environmental Protection (MEDEP) [Ref. 24, p. 2]. Subsequent correspondence between the responding contractor, EPA, and MEDEP stated that the release date could not be determined, and that the release was to be treated as an old/historic release [Ref. 24, p. 4]. As a response to the presence of PCBs within the buildings, a Toxic Substances Control Act (TSCA) Self-Implementing Cleanup Plan (SICP) was prepared in April 2006 and approved by EPA in June 2006 [Ref. 42, p. 1; Ref. 53, p. 2]. Numerous samples of interior building media were collected including: surface wipes of building interior surfaces, sludge, interior soil, wood, and debris. The results indicated that the PCB contamination was widespread throughout the interior of the Keddy Mill property buildings [Ref. 42, pp. 9, 10, 15-17, 20, 21]. Details pertaining to this plan and the subsequent cleanup action are discussed below in the Environmental Removal Actions section.

No transformers were noted during the April 2012 EPA Site Inspection (SI) site visit. No details regarding the disposition of the PCB electrical components are currently known.

The presence of PCB-containing electrical components on the property as recently as 2005, long after industrial activities vacated the property, suggests that PCB-containing electrical components were utilized on the property when it was in operation.

In addition to electrical components, EPA has generally identified hydraulic systems, particularly in the steel manufacturing industry, as containing PCBs. The EPA states that these hydraulic systems operate at high pressure and often leak [Ref. 58, p. 15]. Several hammer units were observed in the basement of the former Melt Building [Ref. 26, p. 3]. It could not be determined if these units were hydraulic.

Cutting oil also formerly contained PCBs [Ref. 46, p. 494]. No cutting tools or similar machinery were observed during the April 2012 EPA SI site visit; however, as a former heavy equipment bucket and piping fabrication shop, it is likely that such equipment was utilized on the Keddy Mill property to cut down large steel pieces into smaller pieces [Ref. 65, pp 23, 24].

Soil sampling efforts performed in 2010 suggested to the investigators that the PCB contamination detected on the property was the result from two sources of PCBs (cutting oils and electrical components) [Ref. 19, pp. 1, 2]. This assertion was based on the levels, spatial distribution, and matrix of materials where PCB contamination was detected during the investigation [Ref. 19, p. 2].

Facility Environmental Investigations

Several environmental investigations have been undertaken on the Keddy Mill property. Table 3 provides a summary of the previous environmental investigations performed.

Table 3 - Previous Environmental Investigations

Performing Company/Agency	Performed For	Investigation Type	Report Date	Tasks Performed	Sample Types Collected	Hazardous substances Detected	References
Consla Geotechnical Engineering, Inc.	Mr. Laurence Keddy	Phase I Limited Environmental Assessment	3/18/93	Property history, interviews, visit	None	NA	Ref. 15, pp. 1, 2, 10
S.W. Cole Engineering, Inc.	Mr. George Wood	Phase I & II Environmental Site Assessment	11/17/99	Property history, interviews, visit; soil sampling, test pitting, limited petroleum-related soil excavation	Soil (subsurface)	Arsenic, cadmium, chromium, copper, lead, nickel, zinc, petroleum hydrocarbon	Ref. 14, pp. 1, 3, 7, 21-24
Jacques Whitford Company, Inc	Unknown	Supplemental Site Investigation	3/9/04	Visit, soil sample collection	Soil (subsurface)	Petroleum hydrocarbons, PCBs (in excess of TSCA), metals	Ref. 17, pp. 1, 3-9
Ransom Environmental Consultants, Inc.	Village at Little Falls, LLC	Plan for Self-Implementation Cleanup of PCB Remediation Waste-Phase I	4/28/06	Visit, PCB sample collection	Surface wipes of building interior surfaces, sludge, interior soil, wood, debris	PCBs	Ref. 42 pp. 1, 8-10, 15-17, 21
Summit Environmental Consultants, Inc.	Town of Windham (through MEDEP)	Soil Sampling Memorandum	5/20/10	Visit, sample collection	Soil from piles in buildings	PCBs	Ref. 18

Table 3 - Previous Environmental Investigations							
Performing Company/Agency	**Performed For**	**Investigation Type**	**Report Date**	**Tasks Performed**	**Sample Types Collected**	**Hazardous substances Detected**	**References**
Summit Environmental Consultants, Inc.	Town of Windham (through MEDEP)	Soil Sampling Memorandum	1/5/11	Visit, sample collection	Surface soil from exterior areas	PCBs	Ref. 19, pp. 1-3, 5-9
Summit Environmental Consultants, Inc.	Town of Windham (through MEDEP)	Phase I Environmental Site Assessment	3/17/11	Property history analysis, visit, records review, interviews	None	NA	Ref. 12, pp. 1, 2
Summit Environmental Consultants, Inc.	Town of Windham (through MEDEP)	Supplemental Sampling Memorandum	7/25/11	Soil and concrete core samples	Surface soil from exterior areas and concrete core samples	PCBs	Ref. 6, pp. 1-6, 8, 10-12, 19
Summit Environmental Consultants, Inc.	Town of Windham (through MEDEP)	Electrical Conductivity Testing	10/24/11	Visit, soil drilling, and conductivity probing	None	NA	Ref. 20, pp. 1, 2
H&S/Nobis Environmental JV, LLC	EPA	Preliminary Assessment	3/21/12	Visit	None	NA	Ref. 22, pp. 1-5
H&S/Nobis Environmental JV, LLC	EPA	Site Inspection	1/15/13	Visit, property history review, sample collection	Surface soil, Slag deposits, Sediment	PCBs	Ref. 4, pp. 1, 7, 8, 26-33, 36-42, 56, 57

Notes:

MEDEP -	Maine Department of Environmental Protection
NA -	Not applicable
PCBs -	Polychlorinated Biphenyls
TSCA -	Toxic Substances Control Act
EPA -	U.S. Environmental Protection Agency

Environmental Removal Actions

Two removal actions were performed on the Keddy Mill property by the property owners at the time [Ref. 14, pp. 3, 26-28; Ref. 53, p. 2].

The first removal action took place in 1997, and involved the excavation of 10.88 tons of petroleum-impacted soil from the north-central portion of the property. Post-excavation samples were not collected for PCB analysis [Ref. 14, pp. 26-28]. As this removal action was conducted outside of both sources, this action does not impact either of the sources evaluated in this HRS.

In May and July 2010, the second removal action was performed in accordance with the TSCA SICP submitted in 2006 [Ref. 42, p. 1; Ref. 53, p. 2]. The SICP included three phases of cleanup actions within the Keddy Mill property buildings:

- Phase I – Remove PCB-contaminated fuel oils remaining in piping and PCB-contaminated sludge, dirt, debris, and oily materials within the buildings [Ref. 42, pp. 4, 5].
- Phase II – Perform additional testing for PCB contamination on building interior porous surfaces. A separate plan was to be prepared to describe this activity, but has not yet been prepared [Ref. 42, p. 5].
- Phase III – Perform additional testing of soil surrounding and underlying the buildings. A separate plan was to be prepared to describe this activity, but has not yet been prepared [Ref. 42, p. 5].

The May through July 2010 removal action encompassed only Phase I of the SICP [Ref. 53, p. 3]. The remaining phases of the plan have not yet been completed. The implemented cleanup action involved: the removal and disposal of sludge, dirt, and oily debris from the building floors; the removal and disposal of heavy oil coating from building floors, walls, and stationary equipment; cleaning and capping of fuel supply piping; and placement of polyethylene and approximately 2 inches of clean sand fill over exposed soils that may contain PCBs in broken areas of concrete. No excavation was performed [Ref. 53, pp. 1, 3]. The solid waste generated by the 2010 removal was transported under a hazardous waste manifest as a PCB solid mixture (93,256 kilograms) to CWM Chemical Services, LLC in Model City, New York. The liquid waste was transported under a hazardous waste manifest as a PCB liquid (235 kilograms) to Cycle Chem, Inc. of Elizabeth, New Jersey [Ref. 53, pp. 17-37].

No post-cleanup samples were collected in association with Phase I of the SICP. In April 2011, concrete core sampling was performed by MEDEP as part of a subsequent investigation. Sample results indicated that PCBs were present in concrete floor materials located throughout each of the buildings and on all levels at concentrations ranging between not detected to 130 mg/kg, with depths ranging to at least 1 inch into the concrete. Additionally, PCBs were detected in the concrete of one wall on the first floor at 9.4 mg/kg [Ref. 21, pp. 4, 5].

Neither the 1997 petroleum contamination removal nor the 2010 Phase I SICP removal affect sources and associated releases scored in this HRS documentation record (refer to Section 2.2.2, Source Nos. 1 and 2, and Section 4.1.2.1.1, Observed Release of this HRS documentation record).

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of Source: Contaminated Soil Associated with Deposited Slag Materials

Source Number: Source No. 1

Source Type: Contaminated Soil

Description and Location of Source:

Source No. 1 is located in the north-central portion of the Keddy Mill property (refer to Figure 2 of this HRS Documentation Record). The geographic coordinates of the approximate center of the area of contaminated soil associated with Deposited Slag Materials are 43° 44' 06.23" North Latitude by 70° 25' 26.51" West Longitude [Ref. 25, pp. 1-3] (refer to Figure 3 of this HRS documentation record).

A May 1970 aerial photograph was taken by the U.S. Geological Survey (USGS) during steel manufacturing and fabrication operations on the Keddy Mill property. The photograph shows an area in the north-central portion of the property as receiving both light and dark colored materials [Ref. 66, pp. 1-3].

The 1997 Phase I/II investigation identified that an area in the north-central portion of the Keddy Mill property contains fill materials consisting of wood, metal, slag, brick, and crushed drums. The investigation report stated that the south face of the fill area slopes steeply upward and is flat at the top [Ref. 14, pp. 18, 23].

In 2011, soil samples were collected for PCB field screening and laboratory analysis. The results indicated that PCBs were consistently detected throughout the Source No. 1 area [Ref. 21, pp. 10-16, 19].

Soil borings advanced within Source No. 1 during the 2011 supplemental investigation contained a dark brown sand with little silt and gravel with some wood, brick, metal filings, concrete, metal shavings and slag. The soil borings indicate that similar materials exist to depths of 14.5 to 19 feet below grade [Ref. 20, pp. 42, 43]. Portions of the top of Source No. 1 were devoid of vegetation, while surrounding areas were vegetated by grasses and small brush [Ref. 26, p. 4]. No evidence of cover material was recorded on the boring logs, or noted by EPA or HSNE START during visits to the Keddy Mill property. The contents of the soil borings are consistent with what was documented in the samples collected during the 2012 EPA SI [Ref. 29, pp. 1-5, 32, 33].

During the 2012 EPA SI, eight soil samples were collected from Source No. 1 from between 0 and 1.3 feet below ground surface [Ref. 29, pp. 1-5, 32, 33] (refer to Figure 3 of this HRS Documentation Record). The samples contained PCBs at concentrations ranging from 47 J µg/kg to 3,000 µg/kg (Aroclor-1248 and Aroclor-1254) [Ref. 33, pp. 26, 27].

Information regarding the process(es) used during the operations on the Keddy Mill property to generate the slag material found in Source No. 1, the mechanism used to deposit the slag, or the approximate amount of slag deposited is not available. It is known that steel manufacturing slag is generated by the addition of slagging agents or fluxes to blast furnaces and steel furnaces to remove impurities from iron ore, steel scrap, and other ferrous feedstock. The formed slag floats on the molten crude iron or steel and is tapped from the furnace and cooled [Ref. 59, p. 2].

2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH SOURCE

- Source Samples

Surface soil samples listed in Table 4 were collected from Source No. 1 in September 2012 during the EPA SI [Ref. 26, pp. 8, 12, 13; Ref. 29, pp. 1-5, 32, 33]. The samples were collected in accordance with the EPA approved Field Task Work Plan dated July 10, 2012 [Ref. 27, pp. 2, 16; Ref. 28]. Eight source samples were collected between 0 and 1.3 feet below grade from various locations within Source No. 1 [Ref. 26, pp. 8, 12, 13].

Table 4 - Source No. 1 Sample Description

Sample ID	Sample Depth (feet bgs)	Sample Date	Sample Description	References
SO-01-0002	0 to 0.5	9/11/12	Dark brown medium to coarse sand with little silt and medium to fine gravel. Dry.	Ref. 26, pp. 12, 13; Ref. 29, p. 1
SO-02-0002	0 to 0.9	9/11/12	Dark brown fine, medium, and coarse sand with trace silt, and fine gravel. Metal slag material observed along with a white fabric-like material. Dry.	Ref. 26, pp. 12; Ref. 29, p. 2
SO-03-0002	0 to 0.9	9/11/12	Brown fine sand with trace silt, medium and coarse sand, and trace fine gravel. Metal slag material observed along with a white fabric-like material. Dry.	Ref. 26, pp. 12; Ref. 29, p. 3
SO-DUP01-0002	0 to 0.9	9/11/12	Field duplicate sample of SO-03-0002.	Ref. 26, pp. 12; Ref. 29, p. 3
SO-04-0002	0 to 0.3	9/11/12	Brown fine sand with little medium sand and trace coarse sand, silt, and fine gravel. Metal slag and shavings material observed along with a white fabric-like material. Dry.	Ref. 26, pp. 12; Ref. 29, p. 4
SO-05-0002	0 to 1.3	9/11/12	Dark brown fine to medium sand with little silt and trace coarse sand and fine to coarse gravel. Slag, brick, metal shavings and white fabric materials were observed. Moist.	Ref. 26, pp. 12; Ref. 29, p. 5

Table 4 - Source No. 1 Sample Description				
Sample ID	**Sample Depth (feet bgs)**	**Sample Date**	**Sample Description**	**References**
SS-06-0002	0 to 1	9/10/12	Brown fine sand and silt, trace coarse sand, trace fine and coarse gravel. Wood, brick, and fabric (wool?) noted in sample.	Ref. 26, p. 8; Ref. 29, p. 32
SS-07-0002	0 to 0.3	9/10/12	Brown fine sand, little silt, trace medium to coarse sand, and fine gravel. Brick pieces noted in sample. Moist.	Ref. 26, p. 8; Ref. 29, p. 33

Notes:
bgs - Below ground surface

The Source No. 1 samples were submitted to a Contract Laboratory Program (CLP)-participating laboratory for analysis of PCBs in accordance with CLP Organic Statement of Work (SOW) SOM01.2 [Ref. 26, pp. 8, 12, 13; Ref. 27, pp. 16; Ref. 29, pp. 1-5, 32, 33; Ref. 30, pp. 2, 5, 6; Ref. 31; Ref. 33, pp. 1, 26, 27; Ref. 35, p. 1, 35].

Chemists not involved with the sample collection performed a Tier II level validation of the analytical results in accordance with the *Region 1 – EPA New England Data Validation Functional Guidelines for Evaluating Environmental Analyses* [Ref. 32; Ref. 33, p. 1; Ref. 34, p. 1; Ref. 38, p. 1]. The Chain of Custody forms are included as Reference No. 30. The CLP-provided analytical data sheets are provided in References 33, 34, and 38. Field notes and field data collection summaries are presented in Reference 26 and Reference 29, respectively.

For the purposes of Source No. 1 evaluation, the analytical results of these eight source soil samples confirm the presence of PCB mixtures Aroclor-1248 and Aroclor-1254 [Ref. 33, pp. 26, 27; Ref. 34, p. 35] (see Table 5 below) at levels significantly above background levels (see Table 8 and Table 9 under the Source No. 2 evaluation). Source No. 1 has been documented to contain hazardous substances in accordance with the HRS [Ref. 1, p. 51587].

Table 5 - Hazardous Substances Associated with Source No. 1					
Sample ID	**Hazardous Substance**	**Bias**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**References**
SO-01-0002	Aroclor-1254	None	1,900 J ug/kg	350 ug/kg	Ref. 33, p. 26; Ref. 44, pp. 1, 2, 4; Ref. 63, pp. 2, 3
SO-02-0002	Aroclor-1248	None	990 J ug/kg	360 ug/kg	Ref. 34, p. 35; Ref. 44, pp. 1, 2, 5; Ref. 63, pp. 4, 5
SO-02-0002	Aroclor-1254	None	1,900 J ug/kg	360 ug/kg	Ref. 34, p. 35; Ref. 44, pp. 1, 2, 5; Ref. 63, pp. 4, 5
SO-03-0002	Aroclor-1248	None	2,300 ug/kg	350 ug/kg	Ref. 33, p. 26; Ref. 44, pp. 1, 2 ,4; Ref. 63, pp. 6, 7

Table 5 - Hazardous Substances Associated with Source No. 1								
Sample ID	**Hazardous Substance**	**Bias**	**Hazardous Substance Concentration**			**Sample-Adjusted CRQL**		**References**
SO-03-0002	Aroclor-1254	None	3,000		ug/kg	350	ug/kg	Ref. 33, p. 26; Ref. 44, pp. 1, 2, 4; Ref. 63, pp. 6, 7
SO-DUP01-0002	Aroclor-1248	None	2,000		ug/kg	350	ug/kg	Ref. 34, p. 34; Ref. 44, pp. 1, 2, 5; Ref. 63, pp. 12, 13
SO-DUP01-0002	Aroclor-1254	None	2,900	J	ug/kg	350	ug/kg	Ref. 34, p. 34; Ref. 44, pp. 1, 2, 5; Ref. 63, pp. 12, 13
SO-04-0002	Aroclor-1254	None	1,200	J	ug/kg	350	ug/kg	Ref. 33, p. 26; Ref. 44, pp. 1, 2, 4; Ref. 63, pp. 8, 9
SO-05-0002	Aroclor-1248	None	660	J	ug/kg	360	ug/kg	Ref. 34, p. 35; Ref. 44, pp. 1, 2, 5; Ref. 63, pp. 10, 11
SO-05-0002	Aroclor-1254	None	1,800		ug/kg	360	ug/kg	Ref. 34, p. 35; Ref. 44, pp. 1, 2, 5; Ref. 63, pp. 10, 11
SS-06-0002	Aroclor-1254	None	180	J	ug/kg	39	ug/kg	Ref. 33, p. 27; Ref. 44, pp. 1, 2, 4; Ref. 63, pp. 14
SS-07-0002	Aroclor-1254	None	47	J	ug/kg	40	ug/kg	Ref. 33, p. 27; Ref. 44, pp. 1, 2, 4; Ref. 63, pp. 14

Notes:
CRQL = Contract Required Quantitation Limit
J = Reported value is an estimate based upon an evaluation of quality control parameters. An analysis of potential bias associated with samples was performed and is presented as part of Reference 44. Although some of the presented data is J-qualified, it does not exhibit a bias.
ug/kg = micrograms per kilogram
Sample-adjusted CRQLs are equivalent to HRS CRQLs as the adjusted (due to moisture, matrix, dilution, etc.) limits are based on the CLP CRQLs. In this instance, the sample-adjusted CRQLs are equivalent to sample quantitation limits [Ref. 64].

List of Hazardous Substances Associated with Source

Aroclor-1248
Aroclor-1254

2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

Observations, sample collection logs, and soil boring logs from previous investigations do not indicate the presence of a maintained engineered barrier cover or runoff control management system [Ref. 20, pp. 42, 43; Ref. 29, pp. 1-5, 32, 33]. Therefore, a containment value of 10 as noted in Table 6 below is assigned for the surface water pathway [Ref. 1, Table 4-2, pp. 51609, 51610].

Table 6 - Hazardous Substances Available to Pathways

Containment Description	Containment Factor Value	References
Gaseous Release to Air: Not Evaluated	Not Scored	
Particulate Release to Air: Not Evaluated	Not Scored	
Release to Ground Water: Not Evaluated	Not Scored	
Release to Surface Water via Overland Flow and/or Flood: No maintained engineered barrier or runoff management system is present to control this source	10	Ref. 1, p. Table 4-2, pp. 51609, 51610; Ref. 29, pp. 1-5, 32, 33

2.4.2 HAZARDOUS WASTE QUANTITY

The hazardous waste quantity for Source No. 1 was assigned based on the area factor value for ource Type "Contaminated Soil" [Ref. 1, Table -5, p. 51591]. Due to the lack of available information (i.e., hazardous waste manifests, waste analytical results or characteristics, discharge records, etc.), neither the Hazardous Constituent Quantity nor the Hazardous Wastestream Quantity were evaluated.

2.4.2.1.1 Hazardous Constituent Quantity

Description

Information on the quantity (in pounds) of individual hazardous substances in Source No. 1 is not available to evaluate Tier A, hazardous constituent quantity. The number of samples collected is not statistically representative of the range of concentrations throughout the source. Therefore, it is not possible to adequately determine a hazardous constituent quantity for Source No. 1 with reasonable confidence [Ref. 1, Section 2.4.2.1.1, p. 51591]. Scoring proceeds to the evaluation of Tier B, hazardous wastestream quantity [Ref. 1, Section 2.4.2.1.2, p. 51591].

Hazardous Constituent Quantity value assigned = Not Scored

2.4.2.1.2 Hazardous Wastestream Quantity

Description

The information on the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for Source No. 1 is not sufficient to evaluate Tier B, hazardous wastestream quantity. There is insufficient information that documents wastestream disposal; therefore, it is not possible to adequately determine a reasonably complete hazardous wastestream quantity for

Source No. 1 [Ref. 1, Section 2.4.2.1.2, p. 51591]. Scoring proceeds to the evaluation of Tier C, volume [Ref. 1, Section 2.4.2.1.3, p. 51591].

Hazardous Wastestream Quantity value assigned = Not Scored

2.4.2.1.3 Volume

Description

The depth of Source No. 1 is not known and the extent of the source has not been determined. The information available is not sufficient to evaluate Tier C, volume, as required by the HRS [Ref. 1, Section 2.4.2.1.3, p. 51591]. Scoring proceeds to the evaluation of Tier D, area [Ref. 1, Section 2.4.2.1.4, p. 51591].

Volume value assigned = 0

2.4.2.1.4 Area

Description

Based upon the analytical results of the source samples, observations of the materials within Source No. 1, and the presence of previous investigation data indicating that PCB contamination is present throughout the Source No. 1 area, the areal extent of this source is defined using the perimeter made up of the six source samples (refer to Figure 3 of this HRS Documentation Record). As presented on Table 7 below, Source No. 1 occupies an area of approximately 15,247 square feet [Ref. 21, pp, 10-16, 19; Ref. 35, p. 1, 2].

Table 7 – Area

Source Type	Units (Square feet)	References
Contaminated Soil	15,247	Ref. 35, pp. 1, 2

To assign a Hazardous Waste Quantity value to a ource Type "Contaminated Soil", the area in square feet is divided by 34,000 [Ref. 1, Table 2-5, p. 51591].

Sum in square feet: 15,247

Equation for Assigning Value [Ref. 1, Table 2-5, p. 51591]: 15,247 ÷ 34,000 = 0.448

Area value assigned = 0.448

2.4.2.1.5 Source Hazardous Waste Quantity Value

The Hazardous Waste Quantity Hazardous Waste Quantity (HWQ) for Source No. 1 is assigned based on the Area Factor Value (0.448) [Ref. 1, Table 2-5, p. 51591].

Source No. 1 Hazardous Waste Quantity Value = 0.448

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of Source: Contaminated Soil in the Vicinity of the Former Melt Building

Source Number: Source No. 2

Source Type: Contaminated Soil

Description and Location of Source:

Source No. 2 is located in the vicinity of the former Melt Building (refer to Figure 4 of this HRS Documentation Record). Source No. 2 is in the shape of a backwards "C", and consists of large areas located north and south of the former Melt Building. The geographic coordinates of the approximate center of the northern portion of Source No. 2 are 43° 44' 06.23" North Latitude by 70° 25' 26.51" West Longitude, and the coordinates of the approximate center of the southern portion of Source No. 2 are 43° 44' 06.23" North Latitude by 70° 25' 26.51" West Longitude [Ref. 25, pp. 1-6].

Transformers were present on the Keddy Mill property in a substation located southwest of the buildings as well as within the Keddy Mill property buildings [Ref. 14, pp. 22, 23, 140; Ref. 24, p. 2]. EPA has identified that the oil within hydraulic systems associated with the steel manufacturing industry may contain PCBs [Ref. 58, p. 15]. Additionally, metal cutting oil also formerly contained PCBs [Ref. 46, p. 494]. Both of these materials may have been utilized on the Keddy Mill property [Ref. 65, pp. 23, 24].

Soil samples collected in May 2010, January 2011, and July 2011 identified that much of the surface soil surrounding the Keddy Mill property buildings has been impacted by the presence of PCB mixtures including Aroclor-1248, Aroclor-1254, and Aroclor-1260 [Ref. 21, pp. 10-12]. The total PCB concentrations detected during these investigations ranged from a low concentration of 0.2 milligrams per kilogram (mg/kg), to a high of 1,100 mg/kg [Ref. 21, p 11; Ref. 19, p. 6]. Many of these soil samples were collected from within the top 6 inches of soil [Ref. 21, pp. 10-12; Ref. 19. pp. 5-9]. The PCBs in soil appeared to be related to the presence of metal filings associated with cutting oils, slag materials, and transformers on the Keddy Mill property [Ref. 21, p. 5].

In September 2012, EPA collected soil samples (0 to 2 feet below grade) from Source No. 2. [Ref. 26, pp. 7-13, 20; Ref. 29, pp. 27-49]. The samples contained PCBs (Aroclor-1242, Aroclor-1248, and Aroclor-1254) at concentrations above background concentrations [Ref. 33, pp. 27, 28; Ref. 34, pp. 35, 36; Ref. 44, pp. 4, 5].

2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH THE SOURCE

- Background Samples

On September 9, 2012, two background surface soil samples (SS-01-0002 and SS-02-0002) were collected as part of the EPA SI [Ref. 26, pp. 7-13, 20; Ref. 29, pp. 27, 28] (refer to Figure 4 of this HRS Documentation Record). Background samples were collected from 0 to 2 feet below grade and are compared to source samples collected at similar depths [Ref. 26, p. 6, 7; Ref. 29, pp. 27, 28]. These sample locations were chosen to represent background conditions because (1) the soil type at these locations was the same soil type as samples collected from Source No. 2; and (2) based upon previous sample results, the background sampling locations appeared to have been minimally effected by past facility operations [Ref. 19, p. 13; Ref. 21, p. 19]. These background surface soil samples were collected in accordance with the EPA-approved Field Task Work Plan dated July 10, 2012 [Ref. 28].

The background and the source soil samples from Source No. 2 were collected during the same sampling event, in accordance with the same sampling methods, from similar depths and matrices, and were analyzed using the same laboratory using the same analytical method: CLP SOW SOM01.2 [Ref. 26, pp. 7-13, 20; Ref. 29, pp. 27-49; Ref. 30, pp. 1-3, 6-9, 12, 13; Ref. 33, p. 1; Ref. 34, p. 1; Ref. 38, p. 1].

Table 8 below provides a summary of the background soil sample descriptions.

Table 8 - Background Soil Sample Descriptions

Sample ID	Sample Depth (feet bgs)	Sample Date	Sample Description	Reference
SS-01-0002	0 to 2	9/10/12	Brown silt and fine sand, trace coarse sand, clay, and fine and coarse gravel. Dry.	Ref. 26, p. 7; Ref. 29, p. 27
SS-02-0002	0 to 2	9/10/12	Gray silt with little fine sand, trace coarse sand. Moist.	Ref. 26, p. 7; Ref. 29, p. 28

Background soil samples were submitted to CLP-participating laboratories for analysis of PCBs in accordance with CLP Organic SOW SOM01.2 [Ref. 26, p. 7; Ref. 29, pp. 27, 28; Ref. 30, p 1; Ref. 31; Ref. 33, p. 1; Ref. 34, p. 1; Ref. 38, p. 1]. HSNE Chemists not involved with the sample collection performed a Tier II level data validation of the analytical results in accordance with the *Region 1 – EPA New England Data Validation Functional Guidelines for Evaluating Environmental Analyses* [Ref. 32; Ref. 33, p. 1; Ref. 34, p. 1; Ref. 38, p. 1]. The Chain of Custody forms are included as Reference No. 30. The CLP-provided analytical data sheets are provided in References 33, 34, and 38. Field notes and field data collection summaries are presented in Reference 26, and Reference 29, respectively. Table 9 below presents the background soil sample results.

Table 9 - Hazardous Substances Associated with Background Soil Samples					
Sample ID	**Hazardous Substance**	**Bias**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**Reference**
SS-01-0002	Aroclor-1242	None	38 U ug/kg	38 ug/kg	Ref. 33, p 27; Ref. 44, pp. 1-3; Ref. 63, p. 17
SS-01-0002	Aroclor-1248	None	38 U ug/kg	38 ug/kg	Ref. 33, p 27; Ref. 44, pp. 1-3; Ref. 63, p. 17
SS-02-0002	Aroclor-1242	None	39 U ug/kg	39 ug/kg	Ref. 33, p 27; Ref. 44, pp. 1-4; Ref. 63, p. 18
SS-02-0002	Aroclor-1248	None	39 U ug/kg	39 ug/kg	Ref. 33, p 27; Ref. 44, pp. 1-4; Ref. 63, p. 18
SS-02-0002	Aroclor-1254	None	39 U ug/kg	39 ug/kg	Ref. 33, p 27; Ref. 44, pp. 1-4; Ref. 63, p. 18

Notes:
CRQL = Contract Required Quantitation Limit
U = Substance was analyzed for, but not detected and the reported value is the Sample Quantitation Limit (SQL) (i.e., Sample Adjusted CRQL). No bias assigned to U qualified data.
ug/kg = micrograms per kilogram
Sample-adjusted CRQLs are equivalent to HRS CRQLs as the adjusted (due to moisture, matrix, dilution, etc.) limits are based on the CLP CRQLs. In this instance, the sample-adjusted CRQLs are equivalent to sample quantitation limits [Ref. 64].

Aroclors-1242, 1248, and 1254 were not detected in background soil samples at concentrations exceeding their respective Sample-Adjusted Contract-Required Quantitation Limit (CRQL) (Sample Quantitation Limit). Therefore Aroclors-1242, 1248, and 1254 are considered above background levels, so defined when the source soil sample concentration equals or exceeds the background sample-adjusted CRQL [Ref. 1, Table 2-3, p. 51589].

- Source Samples

Surface soil samples listed in Table 10 below were collected during the 2012 EPA SI. Figure 4 of this HRS Documentation Record provides the sample locations. The samples were collected in accordance with the approved Field Task Work plan dated 10 July, 2012 [Ref. 28, pp. 23, 25-26, 36-37].

Table 10 – Surface Soil Sample Descriptions				
Sample ID	**Sample Depth (feet bgs)**	**Sample Date**	**Sample Description**	**References**
SS-08-0002	0 to 2	9/10/12	Top foot - Dark brown silt and coarse to medium sand, little gravel. Moist. Bottom foot - Brown coarse to medium sand, trace silt, trace fine gravel. Moist.	Ref. 26, p. 9; Ref. 29, p. 34
SS-09-0002	0 to 1	9/11/12	Dark brown coarse to medium sand, little silt, little medium to fine gravel. Dry.	Ref. 26, p. 13; Ref. 29, p. 35
SS-DUP01-0002	0 to 1	9/11/12	Field duplicate sample of SS-09-0002.	Ref. 26, p. 13; Ref. 29, p. 35
SS-10-0002	0 to 1.5	9/10/12	Light brown/tan fine sand, trace medium sand and trace silt. Glass observed in sample. Sample exhibited a slight petroleum odor and appeared to be more-cohesive than would be expected of a sand matrix. Dry.	Ref. 26, p. 9; Ref. 29, p. 36
SS-11-0002	0 to 2	9/10/12	Brown silt and fine sand, trace coarse sand. Moist.	Ref. 26, p. 9; Ref. 29, p. 37
SS-12-0002	0 to 0.7	9/11/12	Brown fine sand, little silt, trace coarse sand, trace fine gravel. Dry.	Ref. 26, p. 10; Ref. 29, p. 38
SS-13-0002	0 to 1	9/11/12	Dark brown fine sand, little silt, trace coarse sand and trace fine gravel. Brick was noted in the sample. Moist.	Ref. 26, p. 10; Ref. 29, p. 39
SS-14-0002	0 to 1	9/11/12	Dark brown fine to medium sand, little coarse sand, trace silt, trace fine gravel. Slag material was noted in the sample. Dry.	Ref. 26, p. 11; Ref. 29, p. 40
SS-15-0002	0 to 2	9/11/12	Dark brown fine sand, little silt, trace medium and coarse sand, trace fine gravel. Slag was noted in the sample between one and two feet bgs. Moist.	Ref. 26, p. 11; Ref. 29, p. 41
SS-17-0002	0 to 1.5	9/11/12	Dark brown fine to medium sand, little silt, trace coarse sand, trace fine and coarse gravel. Brick and wool-like fabric noted in the sample. Moist.	Ref. 26, pp. 11, 12; Ref. 29, p. 43
SS-18-0002	0 to 2	9/11/12	Brown fine sand, little medium sand, little silt, trace coarse sand, trace fine and coarse gravel. Dry.	Ref. 26, p. 11; Ref. 29, p. 44
SS-19-0002	0 to 2	9/14/12	Dark brown fine to medium sand, little coarse sand, trace silt, trace fine and coarse gravel. Metal material was noted in the sample. Dry.	Ref. 26, p. 20; Ref. 29, p. 45
SS-DUP02-0002	0 to 2	9/14/12	Field duplicate sample of SS-19-0002.	Ref. 26, p. 20; Ref. 29, p. 45
SS-20-0002	0 to 1	9/14/12	Brown fine to medium sand, little silt, trace coarse sand, trace fine gravel. Some slag material noted in the sample. Dry.	Ref. 26, p. 20; Ref. 29, p. 46
SS-21-0002	0 to 1.5	9/11/12	Brown fine to coarse sand, trace silt, trace fine and coarse gravel. Dry.	Ref. 26, p. 11; Ref. 29, p. 47
SS-22-0002	0 to 2	9/11/12	0-1 feet bgs - Dark brown fine to coarse sand, little silt, trace fine and coarse gravel. Slag noted in the sample. Dry. 1-1.5 feet bgs - Red-brown fine to coarse sand, little silt, trace fine gravel. Slag noted in the sample. Dry. 1.5-2 feet bgs - tan/gray fine to medium sand with some clay. Moist.	Ref. 26, p. 11; Ref. 29, p. 48
SS-23-0002	0 to 1	9/11/12	Light brown fine sand, little silt, trace medium and coarse sand, trace fine and coarse gravel. Pieces of burnt wood noted in sample.	Ref. 26, p. 11; Ref. 29, p. 49

Notes:
bgs - Below ground surface
Soil sample SS-16-0002 was collected from an area at the southernmost portion of the property and is not part of

Source No. 2.

Surface soil samples were submitted to CLP-participating laboratories for analysis of PCBs in accordance with CLP Organic SOW SOM01.2 [Ref. 26, pp. 7-13, 20; Ref. 29, pp. 29-49; Ref. 30, pp. 1-3, 6-9, 12, 13; Ref. 31]. Chemists not involved with the sample collection performed a Tier II level validation of the analytical results in accordance with the *Region 1 – EPA New England Data Validation Functional Guidelines for Evaluating Environmental Analyses* [Ref. 32; Ref. 33, p. 1; Ref. 34, p. 1; Ref. 38, p. 1]. The Chain of Custody forms are included as Reference No. 30. The CLP-provided analytical data sheets are provided in References 33, 34, and 38. Field notes and field data collection summaries are presented in Reference 26, and Reference 29, respectively. Table 11 below presents the surface soil sample results.

For the purposes of Source No. 2 evaluation, the analytical results of these 17 source samples confirm the presence of PCB mixtures Aroclor 1242, Aroclor-1248, and Aroclor-1254 [Ref. 33, p. 26; Ref. 34, p. 34; Ref. 38, pp. 22, 23; Ref. 44, pp. 4, 5] (see Table 11 below). Source No. 2 has been documented to contain hazardous substances in accordance with the HRS [Ref. 1, p. 51587].

Table 11 - Hazardous Substances Associated with Source No. 2

Sample ID	Hazardous Substance	Bias	Hazardous Substance Concentration	Sample-Adjusted CRQL	References
SS-08-0002	Aroclor-1248	None	140 ug/kg	38 ug/kg	Ref. 33, p. 27; Ref. 44, pp. 1-4; Ref. 63, p. 19
SS-08-0002	Aroclor-1254	None	150 ug/kg	38 ug/kg	Ref. 33, p. 27; Ref. 44, pp. 1-4; Ref. 63, p. 19
SS-09-0002	Aroclor-1242	None	110,000 J ug/kg	15,000 ug/kg	Ref. 34, p. 36; Ref. 44, pp. 1-4; Ref. 63, p. 21
SS-DUP01-0002	Aroclor-1242	None	100,000 J ug/kg	14,000 ug/kg	Ref. 34, p. 37; Ref. 44, pp. 1-54; Ref. 63, p. 40
SS-10-0002	Aroclor-1248	None	110 J ug/kg	38 ug/kg	Ref. 33, p. 28; Ref. 44, pp. 1-4; Ref. 63, p. 22
SS-10-0002	Aroclor-1254	None	420 ug/kg	38 ug/kg	Ref. 33, p. 28; Ref. 44, pp. 1-4; Ref. 63, p. 22
SS-11-0002	Aroclor-1254	None	55 J ug/kg	38 ug/kg	Ref. 33, p. 28; Ref. 44, pp. 1-5; Ref. 63, p. 23

Table 11 - Hazardous Substances Associated with Source No. 2					
Sample ID	**Hazardous Substance**	**Bias**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**References**
SS-12-0002	Aroclor-1254	None	150 ug/kg	36 ug/kg	Ref. 34, p. 36; Ref. 44, pp. 1-5; Ref. 63, p. 24
SS-13-0002	Aroclor-1248	None	1,900 ug/kg	370 ug/kg	Ref. 34, p. 36; Ref. 44, pp. 1-5; Ref. 63, p. 26
SS-13-0002	Aroclor-1254	None	4,000 ug/kg	370 ug/kg	Ref. 34, p. 36; Ref. 44, pp. 1-5; Ref. 63, p. 26
SS-14-0002	Aroclor-1254	None	1,900 ug/kg	370 ug/kg	Ref. 34, p. 36; Ref. 44, pp. 1-5; Ref. 63, p. 28
SS-15-0002	Aroclor-1254	None	640 J ug/kg	190 ug/kg	Ref. 34, p. 36; Ref. 44, pp. 1-5; Ref. 63, p. 30
SS-17-0002	Aroclor-1254	None	100 J ug/kg	40 ug/kg	Ref. 34, p. 37; Ref. 44, pp. 1-5; Ref. 63, p. 31
SS-18-0002	Aroclor-1254	None	67 ug/kg	36 ug/kg	Ref. 34, p. 37; Ref. 44, pp. 1-5; Ref. 63, p. 32
SS-19-0002	Aroclor-1254	None	90 ug/kg	36 ug/kg	Ref. 38, p. 22; Ref. 44, pp. 1-4; Ref. 63, p. 33
SS-DUP02-0002	Aroclor-1254	None	86 ug/kg	37 ug/kg	Ref. 38, p. 23; Ref. 44, pp. 1-4; Ref. 63, p. 41
SS-20-0002	Aroclor-1254	None	76 ug/kg	39 ug/kg	Ref. 38, p. 23; Ref. 44, pp. 1-4; Ref. 63, p. 34
SS-21-0002	Aroclor-1254	None	160 J ug/kg	35 ug/kg	Ref. 34, p. 37; Ref. 44, pp. 15; Ref. 63, p. 35

Table 11 - Hazardous Substances Associated with Source No. 2					
Sample ID	**Hazardous Substance**	**Bias**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**References**
SS-22-0002	Aroclor-1254	None	61 J ug/kg	41 ug/kg	Ref. 34, p. 37; Ref. 44, pp. 1-5; Ref. 63, p. 36
SS-23-0002	Aroclor-1254	None	780 ug/kg	170 ug/kg	Ref. 34, p. 37; Ref. 44, pp. 1-5; Ref. 63, p. 37

Notes:
CRQL = Contract Required Quantitation Limit
J = Reported value is an estimate based upon an evaluation of quality control parameters. An analysis of potential bias associated with samples was performed and is presented as part of Reference 44. Although some of the presented data is J-qualified, it does not exhibit a bias.
ug/kg = micrograms per kilogram
Sample-adjusted CRQLs are equivalent to HRS CRQLs as the adjusted (due to moisture, matrix, dilution, etc.) limits are based on the CLP CRQLs. In this instance, the sample-adjusted CRQLs are equivalent to sample quantitation limits [Ref. 64].
Soil sample SS-16-0002 did not contain detections of PCBs, and is not included in this table

List of Hazardous Substances Associated with Source No. 2

Aroclor-1242
Aroclor-1248
Aroclor-1254

2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

Site observations, sample collection logs, and previous soil borings do not indicate the presence of a maintained engineered barrier cover or runoff control management system [Ref. 20, pp. 45, 46; Ref. 29, pp. 1-5, 32, 33]. Therefore, a containment value of 10 as noted in Table 12 below is assigned for the surface water pathway [Ref. 1, Table 4-2, pp. 51609, 51610].

Table 12 - Hazardous Substances Available to Pathways		
Containment Description	**Containment Factor Value**	**Reference**
Gaseous Release to Air: Not Evaluated	Not Scored	
Particulate Release to Air: Not Evaluated	Not Scored	
Release to Ground Water: Not Evaluated	Not Scored	
Release to Surface Water via Overland Flow and/or Flood: No maintained engineered barrier or runoff management system is present to control this source	10	Ref. 1, p. Table 4-2, pp. 51609, 51610; Ref. 29, pp. 34-49

2.4.2 HAZARDOUS WASTE QUANTITY

The hazardous waste quantity for Source No. 2 was assigned based on the area factor value for ource Type “Contaminated oil” [Ref. 1, Table -5, p. 51591]. Due to the lack of available information (i.e., hazardous waste manifests, waste analytical results or characteristics, discharge

records, etc.), neither the Hazardous Constituent Quantity nor the Hazardous Wastestream Quantity were evaluated.

2.4.2.1.1 Hazardous Constituent Quantity

Description

Information on the quantity (in pounds) of individual hazardous substances in Source No. 2 is not available to evaluate Tier A, hazardous constituent quantity. The number of samples collected is not statistically representative of the range of concentrations throughout the source. Therefore, it is not possible to adequately determine a hazardous constituent quantity for Source No. 2 with reasonable confidence [Ref. 1, Section 2.4.2.1.1, p. 51591]. Scoring proceeds to the evaluation of Tier B, hazardous wastestream quantity [Ref. 1, Section 2.4.2.1.2, p. 51591].

Hazardous Constituent Quantity value assigned = Not Scored

2.4.2.1.2 Hazardous Wastestream Quantity

Description

The information on the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for Source No. 2 is not sufficient to evaluate Tier B, hazardous wastestream quantity. There is insufficient information that documents wastestream disposal; therefore, it is not possible to adequately determine a reasonably complete hazardous wastestream quantity for Source No. 2 [Ref. 1, Section 2.4.2.1.2, p. 51591]. Scoring proceeds to the evaluation of Tier C, volume [Ref. 1, Section 2.4.2.1.3, p. 51591].

Hazardous Wastestream Quantity value assigned = Not Scored

2.4.2.1.3 Volume

Description

The depth of the Source No. 2 is not known and the extent of the source has not been determined. The information available is not sufficient to evaluate Tier C, volume, as required by the HRS [Ref. 1, Section 2.4.2.1.3, p. 51591]. Scoring proceeds to the evaluation of Tier D, area [Ref. 1, Section 2.4.2.1.4, p. 51591].

Volume value assigned = 0

2.4.2.1.4 Area

Description

Based upon the analytical results of the source samples, observations of the materials within Source No. 2, and the presence of previous investigation data indicating that PCB contamination is present throughout the Source No. 2 area, the areal extent of this source is defined using the

perimeter made up of 13 surface soil sample locations (refer to Figure 4 of this HRS Documentation Record) [Ref. 21, pp. 10-16, 19]. As presented on Table 13 below, Source No. 2 occupies an area of approximately 63,613 square feet [Ref. 43].

Table 13 – Area		
Source Type	**Units (Square feet)**	**Reference**
Contaminated Soil	63,613	Ref. 43; Figure 2

To assign a Hazardous Waste Quantity value to a ource Type "Contaminated oil", the area in square feet is divided by 34,000 [Ref. 1, Table 2-5, p. 51591].

Sum in square feet: 63,613

Equation for Assigning Value [Ref. 1, Table 2-5, p. 51591]: 63,613 ÷ 34,000 = 1.87

Area value assigned = 1.87

2.4.2.1.5 Source Hazardous Waste Quantity Value

The HWQ for Source No. 2 is assigned based on the Area Factor Value (1.87) [Ref. 1, Table 2-5, p. 51591].

Source No. 2 Hazardous Waste Quantity Value = 1.87

Table 14 - Summary of Source Descriptions							
Source No.	Source Hazardous Waste Quantity Value	Source Hazardous Constituent Quantity Complete? (Y/N)	Containment Factor Value by Pathway				
			Ground Water (Ref 1, Table 3-2)	Surface Water		Air	
				Overland Flow/Flood (Ref 1, Table 4-2)	GW to SW Migration	Gas (Ref 1, Table 6-3)	Particulate (Ref 1, Table 6-9)
1	0.448	N	Not Scored	10	Not Scored	Not Scored	Not Scored
2	1.87	N	Not Scored	10	Not Scored	Not Scored	Not Scored

Notes:
GW – Ground Water
No. – Number
N – No
SW – Surface Water
Y – Yes

Total Source Hazardous Waste Quantity Value: 2.318

Other Possible Sources Not Scored:

PCB Releases Resulting in Contaminated Building Materials

During sampling activities on the Keddy Mill property in July 2005, property owner contractors discovered that as much as 40 gallons of PCB-containing oil was released to the concrete floor of the Keddy Mill property buildings. The release was reported to the MEDEP [Ref. 24, pp. 1, 2]. Subsequent sampling of interior building media including: surface wipes of building interior surfaces, sludge, interior soil, wood, and debris indicated that the PCB contamination was not limited to the known PCB release area, but was widespread throughout the interior of the Keddy Mill property buildings [Ref. 42, pp. 9, 10, 15-17, 20, 21].

A cleanup action was conducted in 2010 as part of the SICP Phase I [Ref. 53, p. 3]. The implemented cleanup action involved: the removal and disposal of sludge, dirt, and oily debris from the building floors; the removal and disposal of heavy oil coating from building floors, walls, and stationary equipment; cleaning and capping of fuel supply piping; and placement of polyethylene and approximately 2 inches of clean sand fill over exposed soils that may contain PCBs in broken areas of concrete [Ref. 53, p. 3]. Subsequent concrete sampling was performed by MEDEP which indicated that PCBs were present in the concrete floors of each of the buildings and on all levels [Ref. 21, pp. 4, 5].

During the 2012 SI property reconnaissance, the buildings were observed to be in poor condition with broken windows and cracked, scaled, and broken concrete floors. Puddles were observed in the building basement, which were likely the result of precipitation entering the building through the broken windows [Ref. 26, pp. 1-4]. Based on the presence of PCBs in the building materials and the condition of the building, the contaminants are able to migrate from the building interior to underlying ground water and surface water (through holes in the concrete floor).

4.0 SURFACE WATER MIGRATION PATHWAY

4.1 OVERLAND/FLOOD MIGRATION COMPONENT

4.1.1 GENERAL CONSIDERATIONS

The Keddy Mill property is located adjacent to the Presumpscot River and the Little Falls Dam. The property is within the Presumpscot River drainage basin [Ref. 12, pp. 10, 18; Ref. 36, pp. 85, 86]. A portion of the Presumpscot River downstream of the Little Falls Dam flows beneath the western portion of the Manufacturing and Office Building basement [Ref. 12, p. 23; Ref. 26, p. 3].

The Keddy Mill property generally slopes south and west toward the Presumpscot River [Ref. 5, p. 1; Ref. 26, pp. 1, 3, 20].

During the EPA SI reconnaissance of the Keddy Mill property, a small intermittent stream was observed flowing southwest and west in a small eroded channel from an area of high elevation in the northeastern portion of the property towards lower elevation in the central portion of the property where water pooled [Ref. 26, p. 3; Ref. 60, pp. 1, 2]. From the pool, water flowed down a loading dock ramp, through a boarded-up door, and into the western portion of the Manufacturing and Office Building basement [Ref. 26, p. 3; Ref. 60, p. 3]. Water within the basement of the former Manufacturing and Office Building discharged to the Presumpscot River under the building, through holes in the concrete floor [Ref. 26, p. 3; Ref. 60, p. 3]. During the EPA SI reconnaissance, silt and sand deposits were observed within the basement in the area of the holes in the concrete floor. These deposits were presumed to be the result of the water entering the basement [Ref. 26 p. 3; Ref. 27, p. 21].

4.1.1.1 Definition of Hazardous Substance Migration Path for Overland/Flood Component

The hazardous substance migration pathway includes both the overland segment and the in-water segment that hazardous substances would take as they migrate away from sources. The overland segment begins at the source and proceeds down slope to the probable point of entry (PPE) to surface water (refer to Figure 2 of this HRS Documentation Record). The in-water segment at the PPE continues in the direction of flow [Ref. 1, Section 4.1.1.1, p. 51605].

Surface water runoff from the western portion of Source No. 1 flows south and southwest for approximately 210 feet to probable point of entry 1 (PPE 1) into the Presumpscot River [Ref. 60, pp. 4, 6]. Surface water runoff from the central and eastern portions of Source No. 1 flows south into an intermittent stream, and then west/southwest about 270 feet to PPE No. 2. PPE No. 2 is located at a hole in the concrete floor within the Manufacturing and Office Building basement that drains directly to the underlying Presumpscot River [Ref. 60, pp. 1-4, 6]. Surface water runoff from the northern portion of Source No. 2 flows north into the intermittent stream, and then west/southwest about 300 feet to PPE No. 2 [Ref. 60, pp 1-3, 5, 6]. Surface water runoff from the southern portion of Source No. 2 flows west/southwest about 80 feet to PPE No. 3 into the Presumpscot River [Ref. 60, pp. 5, 6].

4.1.1.2 Target Distance Limit

The most-upstream PPE for the Keddy Mill property is PPE No. 1 associated with Source No. 1. The most downstream PPE is PPE No. 3, associated with Source No. 2.

None of the sediment samples collected as part of the 2012 EPA SI were from areas beyond 15 miles downstream of the most-downstream PPE No. 3 [Ref. 29, pp. 6-26; Ref. 27, pp. 8, 17, 18]. Therefore, as an observed release is not documented beyond 15 miles from the most-downstream PPE (PPE No. 3), as shown on Figure 5, the Target Distance Limit (TDL) extends 15 miles downstream of the PPE No. 3 [Ref. 1, p. Section 4.1.1.2, p. 51905].

The entirety of the 15-mile TDL is contained within the Presumpscot River (Figure 5) [Ref. 39].

4.1.2.1 Likelihood of Release

4.1.2.1.1 Observed Release

Chemical Analysis – 2012 Sediment Samples

Background Concentrations

As summarized on Table 15 below, two background sediment samples (SED-01 and SED-02) were collected as part of the EPA SI [Ref. 26, pp. 20, 21; Ref. 29, pp. 6-8]. The background sediment samples were collected from 0 to 2 feet bgs upstream of the PPEs [Ref. 26, pp. 20, 21; Ref. 29, pp. 6-8] (see Figure 6 of this HRS documentation record). The background sample locations were selected to represent each of the different sediment depositional environments encountered along the Presumpscot River during the sampling. These areas include portions of the Presumpscot River behind dams and within the Presumpscot River adjacent to wetlands. The background sediment samples were collected of the entire sediment core between 0 and 2 feet below the mud line. These background sediment samples were collected in accordance with the EPA-approved Field Task Work Plan dated July 10, 2012 [Ref. 28]. Table 16 below provides further description of the background sediment samples collected.

Table 15 - Background Sediment Sample Locations

Sample ID	Sample Matrix	Sample Location	Distance Upstream of PPE No. 1	Depth Below Mud Line (feet)	Date	References
Within the Presumpscot River - Upstream of Dam Impoundment						
SED-01	Sediment	Within the Presumpscot River, immediately upstream of the Gambo Dam (approximately 1.5 miles upstream of the Keddy Mill property).	1.5 miles	0 to 2	9/14/12	Ref. 26, p. 21; Ref. 27, p. 8; Ref. 29, p. 6; Ref. 45, pp. 1, 3
Within the Presumpscot River - Adjacent to Wetland Frontage						
SED-02	Sediment	Within the Presumpscot River adjacent to an area of wetland frontage upstream of the Route 202 bridge.	420 feet	0 to 2	9/14/12	Ref. 26, p. 20; Ref. 27, p. 8; Ref. 29, p. 7 Ref. 45, pp. 1, 2 Ref. 61, pp. 2, 5

Notes:
No. = Number
PPE = Probable point of Entry

Table 16 - Background Sediment Sample Descriptions

Sample ID	Sample Description	References
Within the Presumpscot River – Upstream of Dam Impoundment		
SED-01	Brown to gray silt, trace fine sand, trace fine gravel. Glass observed in the sample.	Ref. 29, p. 6
Within the Presumpscot River - Adjacent to Wetland Frontage		
SED-02	Brown/tan fine to medium sand, trace silt. Some organic (wood) materials noted in sample.	Ref. 29, p. 7

Notes:

The background sediment samples were submitted to a CLP-participating laboratory for PCBs in accordance with CLP Organic SOW SOM01.2 [Ref. 26, pp. 20, 21; Ref. 29, pp. 6-8; Ref. 30, p. 10; Ref. 31; Ref. 33, p. 1; Ref. 34, p. 1; Ref. 38, p. 1]. The background sediment samples were also analyzed for Total Organic Carbon (TOC) via Lloyd Kahn method as an additional means of comparison to contaminated sediment samples [Ref. 41, pp. 1, 3].

Chemists not involved with the sample collection performed a Tier II level data validation of the CLP-provided sediment sample analytical results in accordance with the *Region 1 – EPA New England Data Validation Functional Guidelines for Evaluating Environmental Analyses* [Ref. 32; Ref. 33, p. 1; Ref. 34, p. 1; Ref. 38, p. 1]. These same chemists also performed a modified Tier I level data validation of the sediment sample TOC analytical results in accordance with the *Region 1 – EPA New England Data Validation Functional Guidelines for Evaluating Environmental Analyses* [Ref. 32; Ref. 33, p. 1; Ref. 34, p. 1; Ref. 38, p. 1]. The Chain of Custody forms are included as References 30 and 40. The CLP-provided analytical data sheets are provided in References 33, 34, and 38. The TOC analytical laboratory data sheets are included in Reference 41 [Ref. 41]. Field notes and field data collection summaries are presented in Reference 26, and Reference 29, respectively.

As analytical results did not detect PCBs above sample-adjusted Contract Required Quantitation Limits (CRQL) in background sediment samples, Table 17 below presents the sample quantitation limits (SQLs) and sample-adjusted CRQLs for Aroclor-1248 and Aroclor-1254.

Table 17 - Hazardous Substances Associated with Background Sediment Samples

Sample ID	Hazardous Substance	Bias	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
Within the Presumpscot River – Upstream of Dam Impoundment					
SED-01	Aroclor-1248	None	84 U ug/kg	84 ug/kg	Ref. 34, p. 35; Ref. 44, pp. 1, 2; Ref. 63, p. 43
SED-01	Aroclor-1254	None	84 U ug/kg	84 ug/kg	Ref. 34, p. 35; Ref. 44, pp. 1, 2; Ref. 63, p. 43
Within the Presumpscot River - Adjacent to Wetland Frontage					
SED-02	Aroclor-1248	None	45 U ug/kg	45 ug/kg	Ref. 34, p. 35; Ref. 44, pp. 1, 2; Ref. 63, p. 44
SED-02	Aroclor-1254	None	45 U ug/kg	45 ug/kg	Ref. 34, p. 35; Ref. 44, pp. 1, 2; Ref. 63, p. 44

Notes:
CRQL = Contract Required Quantitation Limit
ID = Identification
U = Substance was analyzed for, but not detected and the reported value is the Sample Quantitation Limit (SQL) (i.e., Sample Adjusted CRQL). No bias assessment needed for U qualified data.
ug/kg = micrograms per kilogram
Sample-adjusted CRQLs are equivalent to HRS CRQLs as the adjusted (due to moisture, matrix, dilution, etc.) limits are based on the CLP CRQLs. In this instance, the sample-adjusted CRQLs are equivalent to sample quantitation limits [Ref. 64].

Contaminated Samples

Between September 12 through 14, 2012, four sediment samples were collected from the Presumpscot River as part of the EPA SI [Ref. 27, pp. 17, 18; Ref. 29, pp. 9, 10, 12, 20]. The samples were collected at depths ranging from 0 to 2 feet below sediment mud line (refer to Figure 6 of this HRS Documentation Record) [Ref. 29, pp. 9, 10, 12, 20]. The samples were collected in accordance with the approved Field Task Work plan dated 10 July, 2012 [Ref. 28, pp. 24, 26, 37-42].

Table 18 below provides a summary of the sediment sample locations and Table 19 provides a summary of the samples. Table 19 below provides further description of the contaminated sediment samples collected.

Table 18 – Contaminated Sediment Sample Location Descriptions

Sample ID	Sample Matrix	Sample Location	Distance Downstream of PPE No. 1	Depth Below Mud Line (feet)	Sample Date	References
Within the Presumpscot River – Upstream of Dam Impoundment						
SED-04	Sediment	Within the Presumpscot River, upstream of Little Falls Dam; adjacent to concrete structure at PPE No. 1	10 feet	0 to 1	9/14/12	Ref. 29, p. 9; Ref 45, p. 1
SED-16	Sediment	Within the Presumpscot River, downstream of the Keddy Mill property along the western river bank in an area of apparent sedimentation, immediately upstream of the Mallison Falls Dam.	3,186 feet	0 to 0.5	9/12/12	Ref. 29, p. 20; Ref. 45, p. 1
Within the Presumpscot River - Adjacent to Wetland Frontage						
SED-05	Sediment	Within the Presumpscot River, downstream of the Keddy Mill property buildings along the western river bank, adjacent to wetland frontage, at a point where the river exits from under the building at PPE No. 3.	378 feet	0 to 2	9/13/12	Ref. 29, p. 10; Ref. 45, p. 1
SED-07	Sediment	Within the Presumpscot River, downstream of the Keddy Mill buildings along the western river bank at the downstream end of an area of wetland frontage	551 feet	0 to 1	9/13/12	Ref. 29, p. 12; Ref. 45, p. 1

Notes:
PPE = Probable point of Entry
Note that PPE No. 2 is located beneath the former Keddy Mill property buildings and was inaccessible.
Due to sampler safety concerns, sediment sample SED-16 was collected from the top 0.5 feet of sediment using clamshell sampler.

The contaminated sediment samples were collected of the entire sediment core between the mud line and the depths identified in the table above.

Table 19 – Contaminated Sediment Sample Descriptions		
Sample ID	**Sample Description**	**References**
Within the Presumpscot River – Upstream of Dam Impoundment		
SED-04	Brown fine to medium sand, little silt, trace coarse sand, trace fine and coarse gravel. Brick material noted in the sample.	Ref. 27, p. 17; Ref. 29, p. 9
SED-16	Gray to brown silt with some fine sand, trace gravel.	Ref. 27, p. 18; Ref. 29, p. 20
Within the Presumpscot River - Adjacent to Wetland Frontage		
SED-05	Brown fine sand, some silt, some medium sand, trace coarse sand, some organic debris (leaves and wood). A petroleum odor was associated with this sample, and a sheen was observed on the water that had separated in the sample mixing bowl.	Ref. 27, p. 17; Ref. 29, p. 10
SED-07	Dark brown silt some fine sand. Organic matter observed in the sample. Plastic was observed in the sample as was slag material. A large amount of slag was observed both in and out of the river in this area.	Ref. 27, p. 18; Ref. 29, p. 12

The contaminated sediment samples were submitted to a CLP-participating laboratory for analysis of PCBs in accordance with CLP Organic SOW SOM01.2 [Ref. 26, pp. 15, 18, 20; Ref. 27, pp.17, 18; Ref. 29, pp. 9-12, 20; Ref. 30, pp. 4, 10, 11; Ref. 31]. As an additional means of comparison between the background sediment samples and the contaminated sediment samples, the contaminated sediment samples were also analyzed for TOC via Lloyd Kahn method [Ref. 41, p. 1].

Chemists not involved with the sample collection performed a Tier II level data validation of the CLP-provided sediment sample analytical results in accordance with the *Region 1 – EPA New England Data Validation Functional Guidelines for Evaluating Environmental Analyses* [Ref. 32; Ref. 33, p. 1; Ref. 34, p. 1; Ref. 38, p. 1]. These chemists also performed a modified Tier I level data validation of the sediment sample TOC analytical results in accordance with the *Region 1 – EPA New England Data Validation Functional Guidelines for Evaluating Environmental Analyses* [Ref. 32; Ref. 33, p. 1; Ref. 38, p. 1]. The Chain of Custody forms are included as References 30 and 40. The CLP-provided analytical data sheets are provided in References 31 and 38. The TOC analytical laboratory data sheets are included in Reference 41. Field notes and field data collection summaries are presented in Reference 26, and Reference 29, respectively.

The contaminated sediment samples were collected from similar environments within the Presumpscot River to those associated with the background samples. Both the background samples and contaminated samples were collected during the same sampling event, and in accordance with the same sampling procedures. Contaminated samples SED-04 and SED-16 were collected upstream of dams along the Presumpscot River, and are compared to background sediment sample SED-01, that was also collected upstream of a dam within the Presumpscot River. Contaminated sediment samples SED-05 and SED-07 were collected from the Presumpscot River in areas adjacent to wetland frontage, and are compared to background sediment sample SED-02, that was collected from the Presumpscot River adjacent to wetlands located upstream of the Keddy Mill property [Ref. 26, pp. 20, 21, Ref. 27, p. 8, Ref. 29, pp. 6, 7, 9, 10, 12, 16; Ref. 45, pp. 1, 2; Ref. 61, pp. 2, 5]. PCBs were not detected above detection limits

in either of the background samples (see Table 17). The background sediment samples and downstream contaminated sediment samples primarily contained brown, tan/gray fine-grained materials (i.e., silt and fine sand) [Ref. 27, pp. 17, 18, Ref. 29, pp. 6, 7, 10, 12].

The results of the TOC analyses show the background concentrations and corresponding downstream concentrations are generally in the same range [Ref. 41, p. 3].

Table 20 below contains the PCB mixtures Aroclor-1248 and Aroclor-1254 detected in the contaminated sediment samples.

Table 20 - Hazardous Substances Associated with Contaminated Sediment Samples

Sample ID	Hazardous Substance	Bias	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
Dam Impoundment Sample					
SED-04	Aroclor-1254	None	280 J ug/kg	42 ug/kg	Ref. 38, p. 21; Ref. 44, pp. 1, 2, 4; Ref. 63, p. 46
SED-16	Aroclor-1254	None	87 J ug/kg	52 ug/kg	Ref. 33, p. 26; Ref. 44, pp. 1, 2, 4; Ref. 63, p. 50
In-Water Segment; Adjacent to Wetland Frontage Sample					
SED-05	Aroclor-1248	None	1,100 J ug/kg	460 ug/kg	Ref. 38, p. 21; Ref. 44, pp. 1, 2, 4; Ref. 63, p. 48
SED-05	Aroclor-1254	None	2,100 ug/kg	460 ug/kg	Ref. 38, p. 21; Ref. 44, pp. 1, 2, 4; Ref. 63, p. 48
SED-07	Aroclor-1254	None	430 J ug/kg	110 ug/kg	Ref. 38, p. 21; Ref. 44, pp. 1, 2, 4; Ref. 63, p. 49

Notes:
CRQL = Contract Required Quantitation Limit
J = Reported value is an estimate based upon an evaluation of quality control parameters. An analysis of potential bias associated with samples was performed and is presented as part of Reference 44. Although some of the presented data is J-qualified, it does not exhibit a bias.
Sample-adjusted CRQLs are equivalent to HRS CRQLs as the adjusted (due to moisture, matrix, dilution, etc.) limits are based on the CLP CRQLs. In this instance, the sample-adjusted CRQLs are equivalent to sample quantitation limits [Ref. 64].

Attribution

PCBs refer to mixtures of up to 209 individual chemicals (referred to as congeners) that do not occur naturally. "Aroclor" is a trade name for these mixtures. The Aroclor name is followed by a four-digit code, where the first two digits refer to type of mixture and the last two digits refer to the approximate percent chlorine by weight [Ref. 46, pp. 467, 468]. The manufacture and import of PCBs has been banned in the United States since 1977 [Ref. 47, p. 1].

PCBs were used in numerous commercial and industrial applications; however, the specific Aroclors detected on the Keddy Mill property, and within the Presumpscot River, are Aroclor-1242, Aroclor-1248, and Aroclor-1254. These were commonly used in: capacitors, transformers, heat transfer units, vacuum pumps, hydraulic fluids, gas-transmission turbines, rubbers, synthetic resins, carbonless papers, adhesives, wax extenders, dedusting agents, inks, cutting oils, pesticide extenders, and sealants/caulking compounds [Ref. 46, pp. 493, 494].

EPA has identified hydraulic systems, particularly in the steel manufacturing industry, as containing PCBs. EPA states that hydraulic systems operate at high pressure and often leak [Ref. 58, p. 15]. Several hammer units were observed in the basement of the former Melt Building [Ref. 26, p. 3]. It could not be determined if these units were hydraulic.

Cutting oil also formerly contained PCBs [Ref. 46, p. 494]. Although no cutting tools or similar machinery were observed during the April 2012 EPA SI site visit, as a former heavy equipment bucket and piping fabrication shop, it is likely that such equipment was utilized on the Keddy Mill property to cut down large steel pieces into smaller pieces [Ref. 26; Ref. 65, pp 23, 24].

Electric transformers were present on the Keddy Mill property [Ref. 14, pp. 22, 23; Ref. 15, p. 13]. A release of between 30 and 40 gallons PCB-containing fluid within the Keddy Mill buildings from at least one transformer was reported to MEDEP in July 2005 [Ref. 24, p. 1]. This PCB contamination, along with documented PCB contamination on the floors and walls throughout the Keddy Mill buildings was the subject of a TSCA cleanup action conducted in 2010 [Ref. 53, pp. 2, 3].

No known upstream sources of PCBs are located between the most-upstream background sample (SED-01) and the most-downstream contaminated sample (SED-16) [Ref. 62].

The primary land use along the Presumpscot River between the Keddy Mill property and the most-downstream sediment sample is either undeveloped or residential [Ref. 48, p. 1].

As summarized above, PCBs detected in the Presumpscot River are at least partially attributable to Source Nos. 1 and 2 for the following reasons:

- Samples collected from Source Nos. 1 and 2 contain PCBs (Aroclors) at elevated concentrations (refer to Section 2.2 of this HRS Documentation Record) [Ref. 33, pp. 26, 27, 28; Ref. 34, pp. 34, 35, 36, 37; Ref. 63, pp. 2-7, 10-14, 19, 21-24, 26, 28, 30-37, 40, 41]
- No functioning and maintained run-on or run-off management system is in place at Source Nos. 1 and 2 to prevent run-off from occurring [Ref. 20, pp. 42, 43; Ref. 29, pp. 1-5, 32, 33].
- Analytical results for samples collected from the Presumpscot River, which receives runoff from Source Nos. 1 and 2, indicate that a release of hazardous substances has occurred to the surface water migration pathway (refer to Section 4.1.2.1.1 of this HRS documentation record) [Ref. 38, pp. 21, 26; Ref. 63, pp. 46, 48, 49, 50].
- The topography of the Keddy Mill property slopes towards the Presumpscot River, and evidence of channelized storm water flow through sources and discharging to the river was observed [Ref. 5, p. 1; Ref. 26, pp. 1, 3, 20; Ref. 27, p. 1; Ref. 60, pp 1, 2, 3].

- The highest concentrations of PCBs detected in sediment samples occurred slightly downstream of PPE No. 2 and decreased with distance from the PPEs [Ref. 38, pp. 21, 26; Ref. 63, pp. 46, 48, 49, 50].
- Based on a review of EPA regulated facilities, no other sources of PCBs along the impacted downstream reach of the Presumpscot River have been identified [Ref. 62].
- Based on a review of aerial photography and municipal zoning, the primary land use along the banks of the Presumpscot River upstream of Keddy Mill and along downstream TDL is undeveloped or rural residential/agricultural [Ref. 48, p. 1; 67, p. 1]. Other regional land use includes: Gambo Dam and power station located 1.5 miles upstream of the Keddy Mill property (at the background sediment sample SED-01); lumber manufacturing located approximately 1,000 feet north of the Keddy Mill property; and a former mill located slightly downstream of sediment sample SED-16) [Ref. 67, p. 2].

Hazardous Substances Released
Aroclor-1248
Aroclor-1254

Surface Water Observed Release Factor Value: 550

4.1.3.2 HUMAN FOOD CHAIN THREAT WASTE CHARACTERISTICS

4.1.3.2.1 Toxicity/Persistence/Bioaccumulation

The Toxicity, Persistence, and Bioaccumulation Factor Values are assigned to the hazardous substances associated with the sources and releases at Keddy Mill property based on the values presented in the Superfund Chemical Data Matrix (SCDM) [Ref. 2, pp. 20, 21].

The TDL for this watershed is comprised entirely of the Presumpscot River, which is a freshwater river [Ref. 39, pp. 1, 2]. Therefore the Toxicity, Persistence, and Bioaccumulation Factor Values for freshwater river watersheds are used [Ref. 2, p. 21]. Aroclor-1248, Aroclor-1242, and Aroclor-1254 are not listed in the SCDM. Therefore, the factor value for non-specific PCBs as cited in SCDM is assigned in Table 21 below [Ref. 47, p. 1].

Table 21 - Toxicity, Persistence, Bioaccumulation Factor Values

Hazardous Substance	Source No.	Toxicity Factor Value	Persistence Factor Value	Bioaccumulation Factor Value	Toxicity/Persistence/ Bioaccumulation Factor Value	Reference
PCBs	1, 2	10,000	1.0	50,000	5.0×10^{8}	Ref. 1, Section 4.1.3.2.1.4, p. 51618; Ref. 2, p. 21

Notes:
No. = Number
PCBs = Polychlorinated Biphenyls

The highest combined toxicity, persistence, and bioaccumulation factor value is for PCBs is 5×10^{8}.

Toxicity/Persistence/Bioaccumulation Factor Value: 5.0×10^{8}
[Ref. 1, Section 4.1.3.2.1.4, p. 51618]

4.1.3.2.2 HAZARDOUS WASTE QUANTITY

Table 22 - Hazardous Waste Quantity

Source No. and Source Type	Source Hazardous Waste Quantity Value (Section 2.4.2.1.5)	Is source hazardous constituent quantity data complete? (yes/no)
1 – Contaminated Soil	0.448	No
2 - Contaminated Soil	1.87	No

Source Hazardous Waste Quantity Value Sum: 2.318

Based upon HRS Table 2-6, the sum of the individual Source Hazardous Waste Quantity Values (2.318) is between 1 and 100; however, because the hazardous constituent quantity is not adequately determined and because targets in this pathway are subject to Level II actual contamination, a hazardous waste quantity factor value of 100 is assigned [Ref. 1, Section 2.4.2.2, p. 51592; Section 4.1.4.3 of this HRS Documentation Record].

Hazardous Waste Quantity: 100
[Ref. 1, Section 2.4.2.2, pp. 51591, 51592]

4.1.3.2.3 Waste Characteristics Factor Category Value

The Toxicity/Persistence Factor Value (10,000) is multiplied by the Hazardous Waste Quantity Factor Value for the watershed (100) in order to determine the Waste Characteristics Product, subject to a maximum value of 1×10^8 (Ref. 1, Section 4.1.3.2.3, p. 51620).

Toxicity/Persistence Factor Value × Hazardous Waste Quantity Factor Value: 1.0×10^6

The product of the Toxicity/Persistence Factor Value and the Hazardous Waste Quantity Factor Value for the watershed is multiplied by the Bioaccumulation Potential Factor Value for PCBs (50,000), subject to a maximum value of 1×10^{12} (Ref. 1, Section 4.1.3.2.3, p. 51620).

Toxicity/Persistence Factor Value (10,000) ×
Hazardous Waste Quantity factor value (100) ×
Bioaccumulation Factor Value (50,000) = 5.0×10^{10}

Based upon HRS Table 2-7, a Waste Characteristics Factor Value of 5.0×10^{10} is assigned a Waste Characteristics Factor Category Value of 320 [Ref. 1, Section 2.4.3.1, Table 2-7, p. 51592].

Waste Characteristics Factor Category Value: 320
[Ref. 1, Section 2.4.3.1, Table 2-7, p. 51592]

4.1.3.3 Human Food Chain Threat Targets

Actual Human Food Chain Contamination

The Presumpscot River supports both cold water and warm water fisheries that are managed by the Maine Department of Inland Fisheries and Wildlife (MDIFW) [Ref. 37, p. 7; Ref. 49; Ref. 50]. The MDIFW stocks the river with brook trout, brown trout, and landlocked salmon in locations upstream (Eel Weir, Dundee Falls) and downstream (Mallison Falls) of the Keddy Mill property; however, the stretch of river between Little Falls and Mallison Falls is not stocked by MDIFW [Ref. 49; Ref. 50; Ref. 51, pp. 6, 7]. It should be noted that a fishing access path is located along the western river bank at the Mallison Street Bridge (slightly upstream of Mallison Falls). During the April 26, 2012 SI reconnaissance, evidence of fishing (empty bait container and coiled fishing line) was observed at the river's edge at the base of the fishing access path [Ref. 26, p. 4]. Fishing for human consumption was not documented between the PPEs and the most downstream sample (SED-16); however it is documented downstream within the 15-mile TDL and therefore is scored under potential contamination (refer to Section 4.1.3.3.2.3 of this HRS Documentation Record).

Actual Food Chain Contamination Value: 0

4.1.3.3.1 Food Chain Individual

The Presumpscot River supports both cold water and warm water fisheries that are managed by the Maine Department of Inland Fisheries and Wildlife (MDIFW) [Ref. 37, p. 7; Ref. 49; Ref. 50]. The MDIFW stocks the river with brook trout, brown trout, and landlocked salmon in locations upstream (Eel Weir 11.5 miles upstream, Dundee Falls 6 miles upstream, Gambo Falls 2 miles upstream) and downstream (Mallison Falls 0.8 miles downstream) of the Keddy Mill property; however, the stretch of river between Little Falls and Mallison Falls is not stocked by MDIFW [Ref. 49, pp. 1, 2, 4; Ref. 50; Ref. 51, pp. 6, 7]. It should be noted that a fishing access path is located along the western river bank at the Mallison Street Bridge (slightly upstream of Mallison Falls). During the April 26, 2012 SI reconnaissance, evidence of fishing (empty bait container and coiled fishing line) was observed at the river's edge at the base of the fishing access path [Ref. 26, p. 4].

During a wetland delineation effort conducted as part of the EPA SI on July 24, 2012, EPA interviewed a fisherman encountered slightly below the Mallison Falls Dam and outfall structure and powerhouse, downstream of the observed release and within the 15-mile TDL. The fisherman stated that he had often caught brown trout and occasionally salmon, and regularly kept fish for consumption. He also stated that many people fish the area and consume their catch [Ref. 52, p. 1].

An observed release of hazardous substances (refer to Section 4.1.2.1.1 of this HRS Documentation Record) having Bioaccumulation Factor Values of 500 or greater to a perennial surface water with a fishery downstream is documented.

Although Actual Food Chain contamination cannot be documented, a documented Human Food Chain fishery is present within the TDL [Ref. 37, p. 7; Ref. 49; Ref. 50; Ref. 51, pp. 6, 7; Ref. 52, p. 1]. Therefore, a Food Chain Individual value of 20 is assigned [Ref. 1, p. 83].

Food Chain Individual Value: 20
[Ref. 1, p. Section 4.1.3.3.1, p. 51620]

4.1.3.3.2 Population

No Level I or Level II concentrations have been documented.

Level I Human Food Chain Population Value: 0
[Ref. 1, Sections 4.1.3.3.2.1, pp. 51620]

Level II Human Food Chain Population Value: 0
[Ref. 1, Sections 4.3.3.2.2, pp. 51620]

4.1.3.3.2.3 Potential Human Food Chain Contamination

The Presumpscot River is designated as a fishery; however, fishery production values for the fishery are not known [Ref. 37, p. 7; Ref. 49, p. 1; Ref. 50, p. 1; Ref. 51, pp. 6, 7; Ref. 52, p. 1]. Therefore, a value of greater than 0 is used to obtain an assigned Human Food Chain Population value of 0.03 from HRS Table 4-18 [Ref. 1, Table 4-18, p. 51621] because fishing for human consumption is known to occur within the TDL [Ref. 52].

USGS gauging station No. 01064118 is located within approximately 7 miles downstream of PPE No. 3, in Westbrook, Maine [Ref. 39, p. 2]. The discharge at this station is 925 cubic feet per second (cfs), and estimated to be 981 cfs at the terminus of the TDL [Ref. 39, p. 1]. According to HRS Table 4-13, a dilution weight of 0.01 (Moderate to Large Stream) is assigned to the watershed [Ref. 1, Table 4-13, p. 51613].

The Potential Human Food Chain Contamination Factor Value is calculated by multiplying the Human Food Chain Population value by the dilution weight for a Moderate to Large Stream, and dividing by 10 [Ref. 1, Section 4.1.3.3.2.3, p. 51621].

$(0.03 \times 0.01) \div 10 = 0.00003$

.

Potential Human Food Chain Contamination Factor Value = 0.00003
[Ref. 1, Section 4.1.3.3.2.3, p. 51621]

4.1.4.2 ENVIRONMENTAL THREAT WASTE CHARACTERISTICS

4.1.4.2.1 Ecosystem Toxicity/Persistence/Bioaccumulation

The Ecosystem Toxicity, Persistence, and Bioaccumulation Factor Values are assigned to the hazardous substances associated with the sources and releases at the Keddy Mill property based on the values presented in the SCDM [Ref. 2, pp. 20, 21].

The TDL for this watershed is comprised entirely of the Presumpscot River, which is a freshwater river [Ref. 39, pp. 1, 2]. Therefore the Ecosystem Toxicity, Persistence, and Bioaccumulation Factor Values for freshwater river watersheds are used [Ref. 2, p. 21]. Ecosystem Toxicity, Persistence, and Bioaccumulation Factor Values are not currently available for Aroclor-1242, Aroclor-1248, or Aroclor-1254. Therefore the factor value for non-specific PCBs as cited in SCDM is assigned in Table 23 below [Ref. 47, p. 1].

Table 23 - Ecosystem Toxicity, Persistence, Bioaccumulation Factor Values

Hazardous Substance	Source No.	Ecosystem Toxicity Factor Value	Persistence Factor Value	Ecosystem Bioaccumulation Factor Value	Ecosystem Toxicity/Persistence/ Bioaccumulation Factor Value	Reference
PCBs	1, 2	10,000	1.0	50,000	5.0×10^{8}	Ref. 1, Section 4.1.4.2.1.4, p. 51622; Ref. 2, p. 21

Notes:
No. = Number
PCBs = Polychlorinated Biphenyls

The highest combined Ecosystem Toxicity, Persistence, and Bioaccumulation factor value is for PCBs: 5×10^{8}.

Ecosystem Toxicity/Persistence/Bioaccumulation Factor Value: 5.0×10^{8}
[Ref. 1, Section 4.1.4.2.1, p. 51621]

4.1.4.2.2 HAZARDOUS WASTE QUANTITY

Table 24 - Hazardous Waste Quantity

Source No. and Source Type	Source Hazardous Waste Quantity Value (Section 2.4.2.1.5)	Is source hazardous constituent quantity data complete? (yes/no)
1 – Contaminated Soil	0.448	No
2 - Contaminated Soil	1.87	No

Source Hazardous Waste Quantity Value Sum: 2.318

Based upon HRS Table 2-6, the sum of the individual Source Hazardous Waste Quantity Values (2.318) is between 1 and 100; however, because the hazardous constituent quantity is not adequately determined and because targets in this pathway are subject to Level II actual contamination, a hazardous waste quantity factor value of 100 is assigned [Ref. 1, Section 2.4.2.2, p. 51592; Section 4.1.4.3 of this HRS Documentation Record].

Hazardous Waste Quantity: 100
[Ref. 1, Section 2.4.2.2, pp. 51591, 51592]

4.1.4.2.3 WASTE CHARACTERISTICS FACTOR CATEGORY VALUE

The Ecosystem Toxicity/Persistence Factor Value (10,000) is multiplied by the Hazardous Waste Quantity Factor Value for the watershed (100) in order to determine the Waste Characteristics Product, subject to a maximum value of 1×10^8 (Ref. 1 Section 4.1.4.2.3, p. 51624).

Toxicity/Persistence Factor Value × Hazardous Waste Quantity Factor Value: 1.0×10^6

The product of the Ecosystem Toxicity/Persistence Factor Value and the Hazardous Waste Quantity Factor Value for the watershed is multiplied by the Ecosystem Bioaccumulation Potential Factor Value for PCBs (50,000), subject to a maximum value of 1×10^{12} (Ref. 1, Section 4.1.4.2.3, p. 51624).

Ecosystem Toxicity/Persistence Factor Value (10,000) ×
Hazardous Waste Quantity factor value (100) ×
Ecosystem Bioaccumulation Factor Value (50,000) = 5.0×10^{10}

Based upon HRS Table 2-7, a Waste Characteristics Factor Value of 5.0×10^{10} is assigned a Waste Characteristics Factor Category Value of 320 [Ref. 1, Section 2.4.3.1, Table 2-7, p. 51592].

Waste Characteristics Factor Category Value: 320
[Ref. 1, Section 2.4.3.1, Table 2-7, p. 51592]

4.1.4.3 ENVIRONMENTAL THREAT – TARGETS

The Keddy Mill property is located adjacent to the Presumpscot River and the Little Falls Dam. The property is within the Presumpscot River drainage basin [Ref. 12, pp. 10, 18; Ref. 36, pp. 85, 86].

The Federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA]) Section 305(a) compelled the States to provide an inventory of navigable waters for which the quality is sufficient to provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife; and allow for recreation in and on the water; or can reasonably be expected to attain such a level within a specified timeframe [Ref. 56, p. 116].

The State of Maine has classified the Presumpscot River between Dundee Pond (upstream of the Keddy Mill property) and Sacarappa Falls as Class B surface water [Ref. 54, p. 11]. Maine Class B surface waters shall be of such quality that they are suitable for the designated uses of drinking water supply after treatment, fishing, agriculture, recreation in and on the water, industrial process and cooling water supply, hydroelectric power generation except as prohibited under Title 12 Section 403, navigation, and as habitat for fish and other aquatic life. The habitat must be characterized as unimpaired [Ref. 55, pp. 2]. Discharges to Class B waters may not cause adverse impact to aquatic life in that the receiving waters must be of sufficient quality to support all aquatic species indigenous to the receiving water without detrimental changes to the resident biological community [Ref. 55, p. 3]. The 2010 Maine Integrated Water Quality Monitoring and Assessment Report (commonly referred to as Section 305(b)) states that the Presumpscot River (Maine Assessment Unit ID No. ME0106000103_608R01) between Dundee Dam and Sacarrappa Falls Dam is impaired by the presence of impoundments (Category 4-C). [Ref. 68, p. 267]. Additionally, EPA has indicated that the designated use of this portion of the river by fish and other aquatic life has been impaired [Ref. 69, p. 1]. Therefore, based upon these classifications, the Presumpscot River is a State-designated area for protection or maintenance of aquatic life as prescribed in Section 305(a) of the Clean Water Act [Ref. 54, p. 11; Ref. 55, pp. 2, 3; Ref. 56, p. 116].

On July 24, 2012, a Senior EPA Wetland Scientist performed a wetland frontage delineation within the Presumpscot River. This delineation identified approximately 0.78 miles of riverine lower perennial emergent nonpersistent wetland frontage within the Presumpscot River between Little Falls and Mallison Falls [Ref. 57, pp. 1, 3, 13, 14].

As indicated in Section 4.1.2.1.1 of this HRS Documentation Record, an observed release of PCBs to the Presumpscot River has been documented, which has impacted a State-designated area for protection or maintenance of aquatic life as prescribed in Section 305(a) of the Clean Water Act [Ref. 1, Table 4-23, p. 51624; Ref. 56, p. 116]. Additionally, this release has impacted wetlands located along the Presumpscot River between Little Falls and Mallison Falls.

Level I Concentrations

No Level I concentrations have been documented.

Level II Concentrations

Actual contamination has been documented in riverine lower perennial emergent nonpersistent wetlands contiguous with the Presumpscot River and in a State-designated area for protection or maintenance of aquatic life as prescribed in Section 305(a) of the CWA, as documented in Section 4.1.2.1.1 of this HRS documentation record [Ref. 54, p. 11; Ref. 55, p. 2; Ref. 56, p. 116; Ref. 57, pp. 1-3, 14].

Most Distant Level II Sample

Sample ID: SED-16
Hazardous Substance: Aroclor-1254
Distance from PPE No. 1: 0.603 miles
References: 45

4.1.4.3.1 Sensitive Environments

4.1.4.3.1.1 Level I Concentrations

Sensitive Environments

No Level I Sensitive Environments were scored.

Wetlands

No Level I wetlands were scored.

4.1.4.3.1.2 Level II Concentrations

Sensitive Environments

As summarized in Table 20 in Section 4.1.2.1.1 of this HRS Documentation Record, Presumpscot River sediment samples contained concentrations of PCBs significantly above background levels, documenting an Observed Release. Additionally, these results indicate that Level II Actual Contamination has been documented within a State-designated area for protection or maintenance of aquatic life as prescribed in Section 305(a) of the CWA. Table 25 below provides a summary of the sensitive environment targets.

Table 25 – Level II Sensitive Environment Targets			
Sensitive Environment	**Distance from PPE to Sensitive Environment**	**Sensitive Environment Value (Ref. 1, Table 4-23)**	**References**
Presumpscot River (state designated area for the protection or maintenance of aquatic life under the Clean Water Act)	0	5	Ref. 54 p. 11; Ref. 55, p. 3; Ref. 56, p. 116

Notes:
PPE: Probable Point of Entry

Sum of Level II Sensitive Environments Value: 5

Wetlands

On July 24, 2012, an EPA Senior Wetland Scientist delineated wetlands along and contiguous to the Presumpscot River [Ref. 26, pp. 4, 5; Ref. 57, p. 1]. The wetland areas delineated are riverine lower perennial emergent nonpersistent [Ref. 57, p. 3]. The sediment samples evaluated at Level II concentrations were collected adjacent to these wetland areas (see Figure 6 of this HRS documentation record).

During wetland delineation activities, a series of emergent wetland fringes of varying lengths and thicknesses were identified. The principle emergent wetland species encountered was Arrow Arum (*Peltandra virginica*); however, lesser amounts of Pickerelweed (*Pontederia cordata L.*) were also noted. The emergent plants are not likely persistent, and therefore the United States Fish and Wildlife Service (USFWS) National Wildlife Inventory (NWI) classification of this wetland is R2EM2 – Riverine Lower Perennial Emergent Nonpersistent [Ref. 57, p. 3].

The delineated wetland frontage between Little Falls and Mallison Falls totaled 0.78 miles [Ref. 57, pp. 14, 16]. The most-distant sediment sample documenting an Observed Release is SED-16, located downstream of the entire length of delineated wetlands; therefore, 0.78 miles of wetland frontage located along the Presumpscot River is subject to Level II Actual Contamination, [Ref. 45; Ref. 57, p. 14]. Table 26 provides a summary of wetland frontage targets.

Table 26 – Level II Wetland Frontage			
Wetland	**Water Body**	**Wetland Frontage in Miles (Ref. 1, Table 4-24)**	**References**
Riverine lower perennial emergent nonpersistent	Presumpscot River	0.78	Ref. 45, pp. 12; Ref. 57, pp, 14, 16

Sum of Level II wetland frontages: 0.78 miles
Wetland Value: 25
[Ref. 1, Table 4-24, p. 51625]

For sensitive environments and wetlands subject to Level II concentrations, the values assigned are summed and multiplied by 1 (5 + 25 × 1 = 30) [Ref. 1, Section 4.1.4.3.1.2, p. 51625].

Level II Concentrations Factor Value: 30

4.1.4.3.1.3 Potential Contamination

Actual contamination is sufficient to qualify the Site for NPL listing. Therefore the Potential Contamination Factor was not scored.

Potential Contamination Factor Value: Not Scored